W. July 6

15¢

The OIL WEEKLY

OIL and GAS ENGINEERING

FOR OIL AND GAS PRODUCERS AND PIPE LINE MEN

THE WEEK'S NEWS INTERPRETED

Gates and seats in Hughes Valves are as finely finished as the cylinders in your car—assuring a perfect shut-off at varying pressures.

HUGHES TOOL COMPANY - HOUSTON, TEXAS, U. S. A.

VOLUME 82 JULY 13, 1936 NUMBER 5

THESE

KENTUCKIANS

KNOW WHAT WE MEAN BY LOW COST PERFORMANCE*

KENTUCKY HAD NATION'S FIRST GUSHER

Kentucky's first oil well, the Beatty Well, is accredited as the first flowing oil well in America. It was drilled in 1819 on the south fork of the Cumberland River by David Beatty who was boring for salt water. A hole 9 feet square was dug 10 feet to rock and timbered. Thence a 3" hole was punched by manual labor to a depth of 170 feet and salt water. To the disgust of all, oil began flowing up with the salt water, polluting it.—so the well was abandoned.

Oil filled the well and overflowed, covering the stream for 35 miles, and then caught fire, causing a backwoodsman to originate the expressive phrase "Hell with the lid off."

*One UNION LINE Is Still In Use — After Drilling 7 Wells

Years ago UNION set out with a definite determination to produce "The Ultimate Low-Cost Wire Rope." These words were not adopted as our slogan, however, until hundreds of records of actual field performance had convinced us that UNION Lines *do* last longer. Here is a record of a UNION Line which has done most of the drilling on 7 wells:

This ⅞" 6x19 line was purchased in 1932, in Ohio. There it was used for drilling the last 600 feet in a 4400-foot well, and for drilling another 4400-foot well from top to bottom. The line was then shipped to Kentucky where it was used on a spudder to drill Craven No. 1 (1200 ft.), Kerrick No. 3 (1400 ft.), Ashton No. 2 (1170 ft.), the last 400 feet in a 1600-foot well, and Ashton No. 3 (1600 ft.). Now, after drilling over 10,000 feet in 7 wells, the line is drilling still another well, as shown in the photograph.

This picture showing 3 generations of Camerons, was taken at H. B. Cameron & Son's Location No. 4, McClean County, Kentucky. The people, left to right, are: H. B. Cameron; Mrs. Walter J. Cameron; Felix Collins, member of crew; Walter J. Cameron, son of H. B.; M. L. Foreman, member of crew; F. A. Donaldson, Union Wire Rope Corp.; F. J. Zogg, Jarecki Mfg. Co., Owensboro, Ky. The young man is James Cameron, son of Mr. and Mrs. Walter J. Cameron.

UNION WIRE ROPE CORPORATION

Executive and Sales Offices: 601 Beacon Life Bldg., Tulsa, Okla.

Factory and General Office: Kansas City Mo. Branch: Portland, Ore. Warehouse: Monahans, Texas

In Mexico: E. O. CHAPA, P. O. Box 604, Tampico, Tamps, Mexico. Stocks at Tampico

JARECKI MFG. CO.

Distributors: Midcontinent, New Mexico and Eastern Oil Fields

MARION MACHINE FOUNDRY & SUPPLY CO.. Rocky Mountain Fields, except New Mexico

Export Agents: (except Mexico) LUCEY EXPORT CORP., Woolworth Bldg., New York; Broad St. House, London

UNION WIRE LINES

The "ULTIMATE LOW COST WIRE ROPE"

DRIVING WITHOUT BRAKES IS ALL RIGHT...

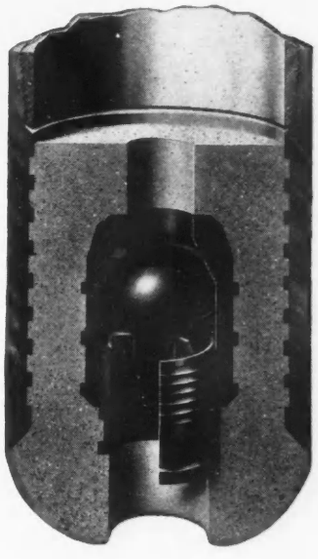
until you want to stop!

●

Landing and cementing casing in your well without using good Floating Equipment is all right too . . . until something goes wrong. Whether your well is shallow or deep, you can eliminate all chance of anything going wrong by using BAKER *Cement* Guiding, Floating and Cementing EQUIPMENT, because Baker Equipment combines in perfect balance the three vital requirements for success—the three points necessary for Happy Landings.

It's STRONG!—stronger than the collapsing strength of the casing . . . more than sufficient Strength for Guiding and Floating the longest and heaviest casing string —that's DEPENDABILITY!

It's SAFE AND SURE FOR CEMENTING! The Buoyant Bakelite Ball makes a *double seal* with the rubber and Bakelite valve seats. The large circulating areas and the smooth, curved contours of the Bakelite ball and valve-stops insure speed and distribution in cementing. All in all — that's VALVE EFFICIENCY!

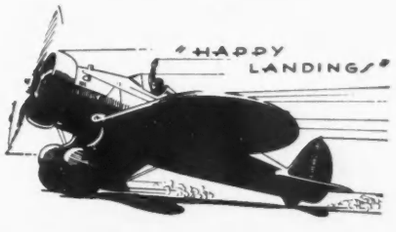


It's EASY TO DRILL UP AND CIRCULATE AWAY! Baker-Formula Concrete and Bakelite drill up easily, without lost time or extra bit expense, and without excess vibration on the cement around the shoe. No metal, or other objectionable fragments are left in the hole to deflect the bit and start a crooked hole. Perfect cores can be taken directly below the shoe — that's DRILLABILITY!

●

HAPPY LANDINGS

For *safe* three-point landings use Baker *Cement* Float Shoes; *Cement* Float Collars; *Cement* Guide Shoes; *Cement* Whirler Shoes, and other Baker specialties.



THE BAKER LINE

is completely described, illustrated and priced in the large Baker Catalog, gladly sent to any oil man upon request. Have you a copy in your files?

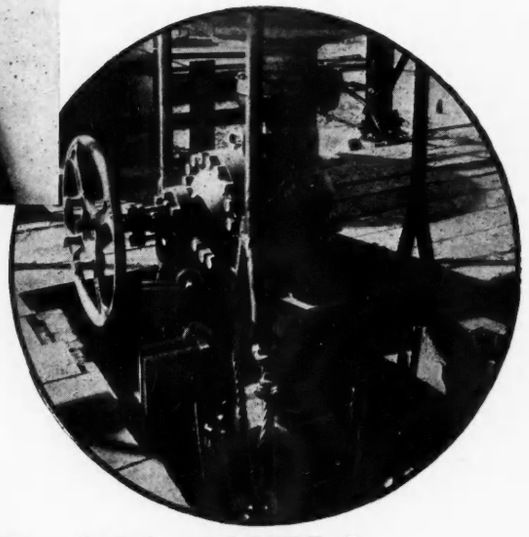
BAKER CEMENT EQUIPMENT

for guiding—floating—cementing casing

BAKER OIL TOOLS, INC.

POST OFFICE BOX 609, HUNTINGTON PARK, CALIFORNIA

COALINGA • TAFT • HOUSTON • OKLAHOMA CITY • TULSA • NEW YORK



Last year they said it . . .
This year they say it . . .
Next year they'll be saying it .

"FOR HIGH PRESSURE OIL WELL . . . FOR CROSS-COUNTRY PIPE LINE...FOR GENERAL FIELD USE... SPECIFY"

DARLING GATE VALVES

Darling Valves are simple in design and sure in operation. They are sturdily constructed for a long life of trouble-free service—but should repairs be needed they can be easily made in little time with little effort.

Oil men who have figured the economy of Darling Valves over a period of years prove to their own profit that "Darlings" save most, serve best!

DARLING VALVE & MFG. CO.
WILLIAMSPORT, PA.

New York **Oklahoma City** **Houston**

Mid-Continent Distributors:
International Supply Co.
Moorlane Company

California Distributors:
Hickey Pipe & Supply Company
3375 East Slauson Ave.,
Los Angeles, Calif.

LIKE FATHER, LIKE SON

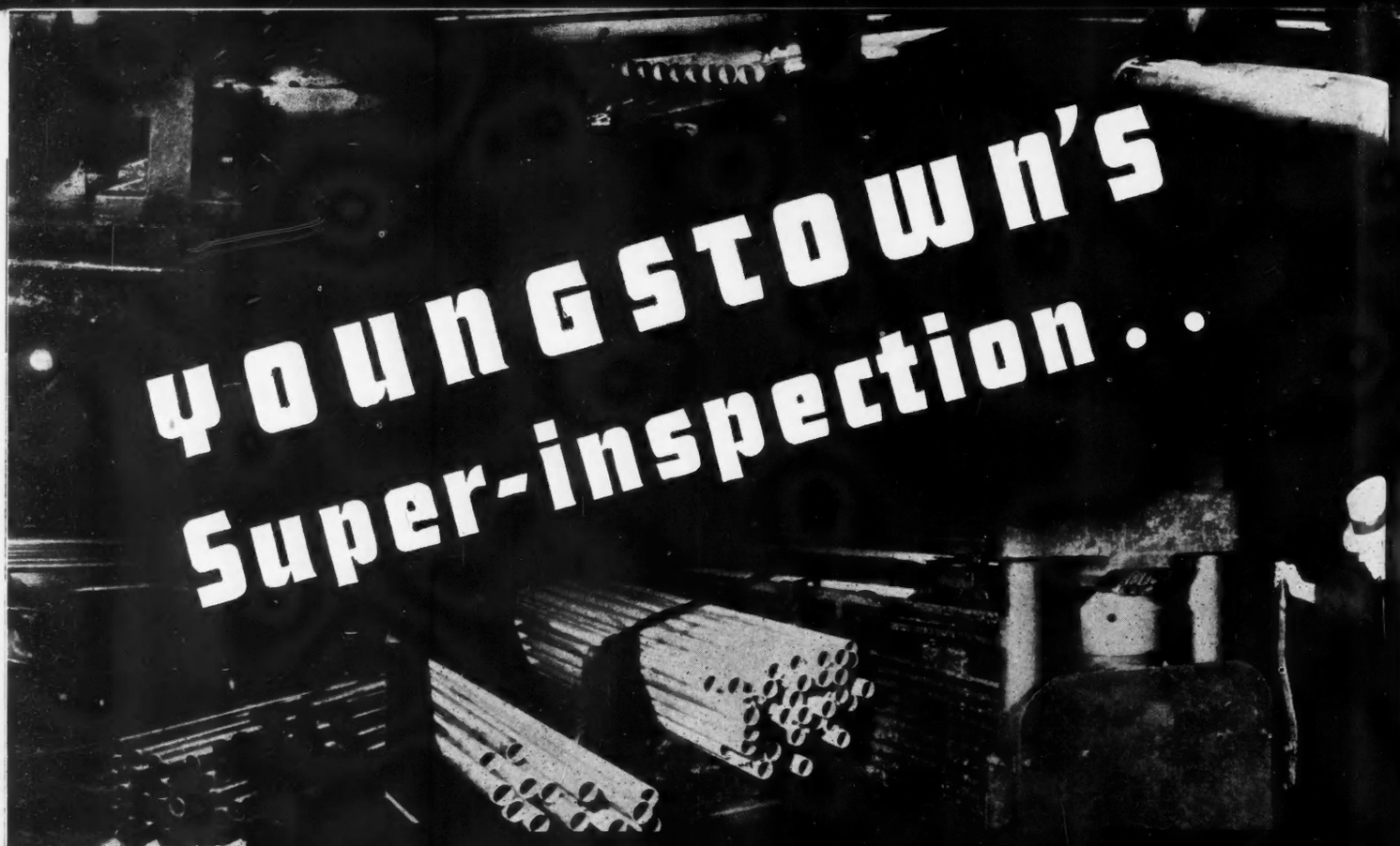
☆

MANY a good driller got his start as a roughneck on a crew superintended by John Coates (right), of Tyler, Texas. This veteran operator is known throughout the industry for his careful methods. Here Mr. Coates is passing on his knowledge of drilling methods to his son, Alton (left). Photograph was taken on the platform of F. Williams 2-A, John Coates' well near Longview, Texas, just before this 10,000 bbl. producer was cemented with 'Incor.'

'Incor'* is made and sold by producers of Lone Star Cement, subsidiaries of International Cement Corporation, New York; also sold by other leading cement manufacturers.

*Reg. U. S. Pat. Off.

'INCOR' 24-Hour Cement



YOUNGSTOWN'S Super-inspection . .

• means lighter work for YOU

In every YOUNGSTOWN pipe-mill, staffs of inspectors, who operate in complete independence of the manufacturing department, constantly check and recheck each step in the manufacturing process. Their job is to make sure that every length of pipe is sound of weld, uniformly strong and ductile, and comes to you pressure-tested, free from flaws and cleanly and accurately threaded. Because they work so hard, your work is made easier.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices - - YOUNGSTOWN, OHIO

Tubular Products; Sheets; Plates; Tin Plate; Bars; Rods; Wire; Nails; Conduit; Unions; Tie Plates and Spikes.

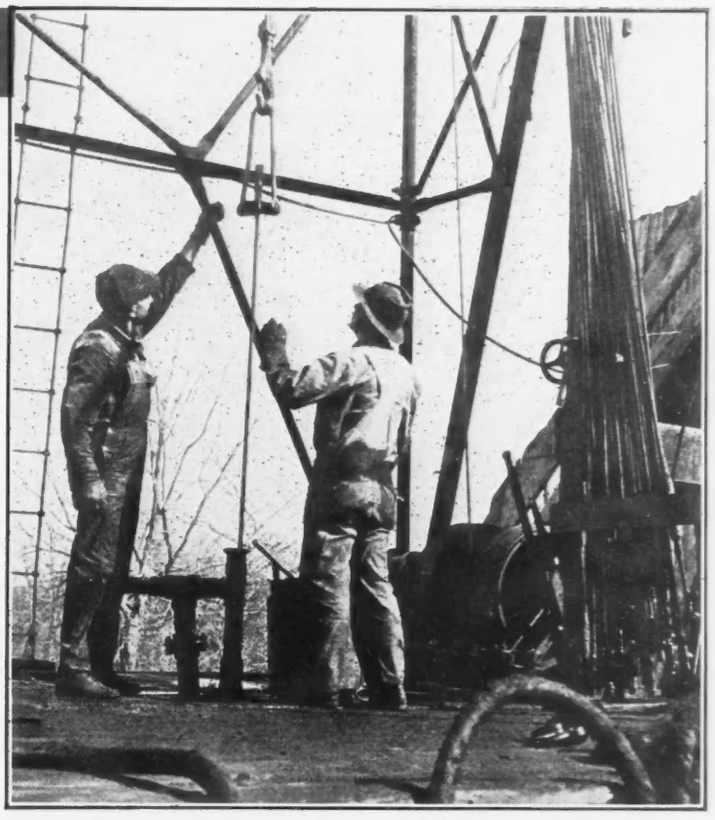
621

STEEL TRADE MARK YOUNGSTOWN PIPE

DRILL PIPE
CASING TUBING
LINE PIPE

As the production superintendent from North Texas said to the "super" from South Texas »

"It's a long time between jobs with these Texasteel Sucker Rods."



WHY ARE THEY BETTER?

1 **ELECTRIC STEEL**—Recognized as the highest grade steel . . . produced by the Electric Furnace Process . . . manufactured especially for sucker rods. Texas Steel Company has the only plant in the Mid-Continent area equipped to turn out sucker rods from melted steel to the finished product. Every rod is the product of 17 years experience.

2 **DELIVERED OVER - NIGHT**—by our own trucks to most points in Texas, Arkansas, Oklahoma, Louisiana and New Mexico oil fields. You are assured of *prompt* and *dependable* service. Only from Texasteel can you get this plant-to-customer service.

A Recognized Supply House In Your Field Can Furnish

TEXASTEEL SUCKER RODS

CORROSION RESISTANT (TYPE N)

Made from a special corrosion-resistant alloy, these Electric Steel Sucker Rods will be in your well long after other rods would have been pulled. They give extra *long life* under the most extreme conditions of West Texas Fields and the salt water wells of other fields. An exclusive feature is the special corrosion-resistant coupling designed for this rod. Made to A. P. I. specifications. Protected with rust-preventive paint, and metal thread protectors. We will be glad to furnish operating data on wells now using these rods . . . check up on them now. It will be worth money to you.

HARD PUMPING (TYPE 1)

A Heavy Duty Electric Steel Sucker Rod . . . designed for economical use in the non-corrosive fields. It is built to do heavy work, month after month and year after year . . . with high tensile strength and more GUTS than you've ever seen in any rod. Made to A. P. I. specifications. Protected with rust-preventive paint, and metal thread protectors. Ask us for operating records.

A GOOD SUCKER ROD (TYPE 2)

For ordinary pumping conditions . . . you will find this Electric Steel Rod is a smart buy. Suitable in a field where there is no water or corrosive condition. Protected with rust preventive paint and metal thread protectors.

HIGH TENSILE PULL ROD (TYPE HT)

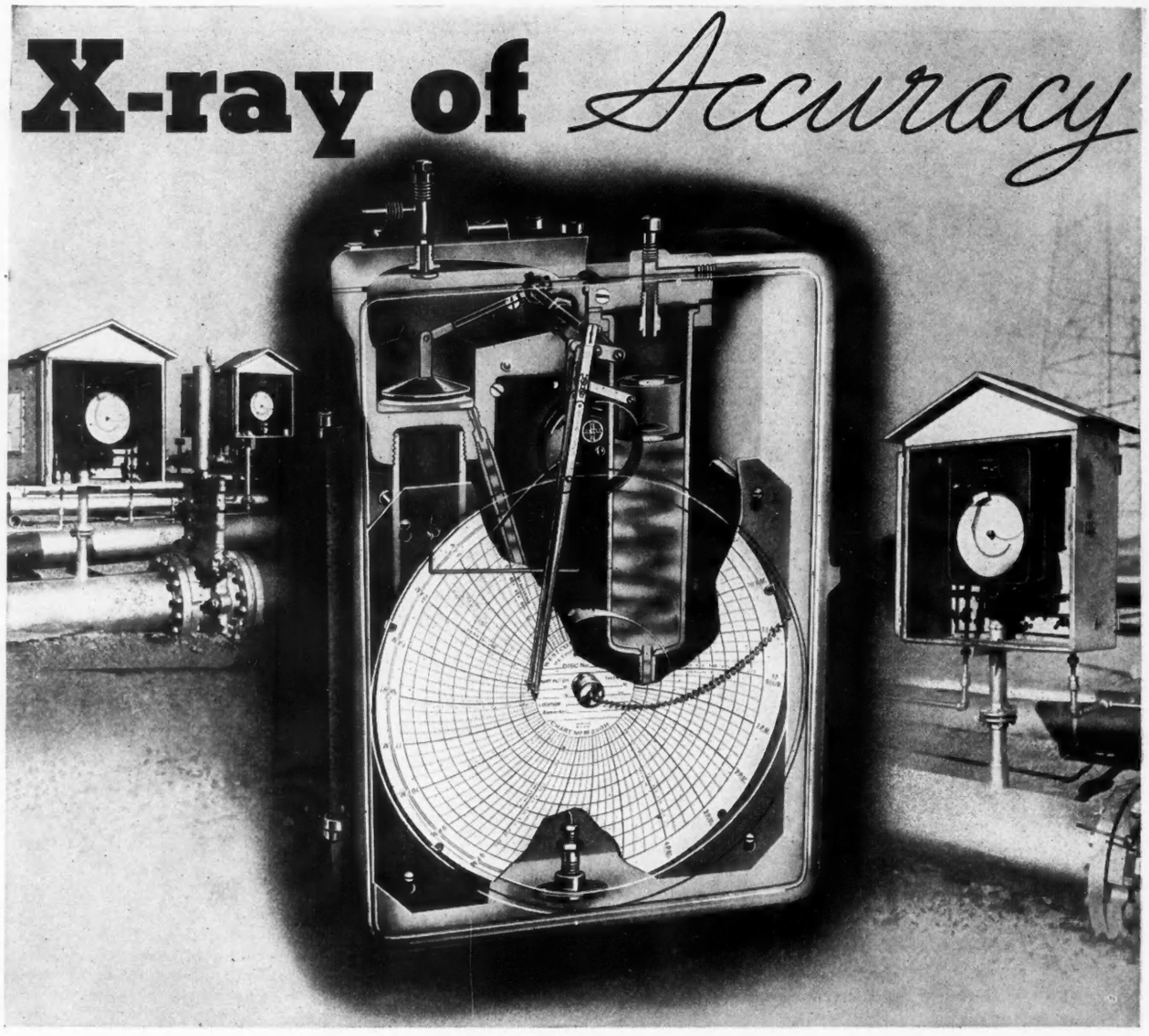
Made of Type 1 Sucker Rod Electric Steel, with tensile strength 100,000 to 110,000 pounds per square inch. Protected with coating of rust-preventive paint. For super pumping conditions these rods will give you years of honest service. Order a supply for the leases that have been giving hell to your rods . . . You'll be glad you took this suggestion.

Let Us Furnish Your Next String

TEXAS STEEL COMPANY Fort Worth, Texas

HOUSTON ★ WAREHOUSE STOCKS ★ KILGORE L. D. 76

X-ray of *Accuracy*



EXAMINE WHAT IT IS that makes Westcott orifice meters appeal to the man out in the field . . . the meter engineer who sees the difference between instruments in terms of the number of adjustments and the maintenance necessary to **KEEP** them accurate!

Notice the **SIMPLICITY** of Westcott meters . . . There's only one moving part between the surface of the mercury and the chart record.

Note too the large float area, with wide clearances eliminating loss of accuracy due to dirt collecting on the mercury . . . the low angle of travel of the float . . . and the small angular travel of the static tube. They make the Westcott meter a **PRACTICAL** instrument, insuring not only accuracy but ruggedness and complete reliability.

There are a score of minor refinements as well, all of which come under the heading of good instrument making . . . including accurate machining and honing. Meter men take them for granted in Westcott meters . . . but without them the most advanced features of design still could not produce a Westcott meter.

New literature gives complete data. It will be mailed on request. Also, information on the new popular Round Case Indicating Flowmeter.

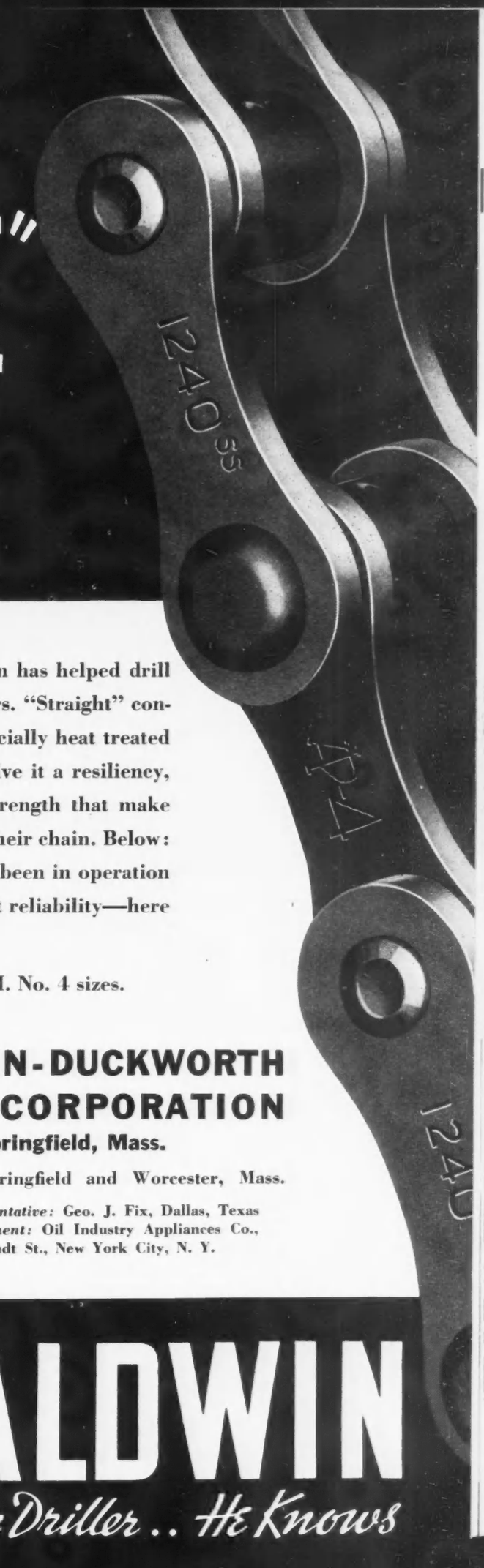
AMERICAN METER CO. CENTENNIAL 1836-1936

AMERICAN METER COMPANY
INCORPORATED
Measurement and control of Gas, Oil, Steam, Air and Liquids
ESTABLISHED 1836

METRIC METAL WORKS • ERIE, PENNSYLVANIA

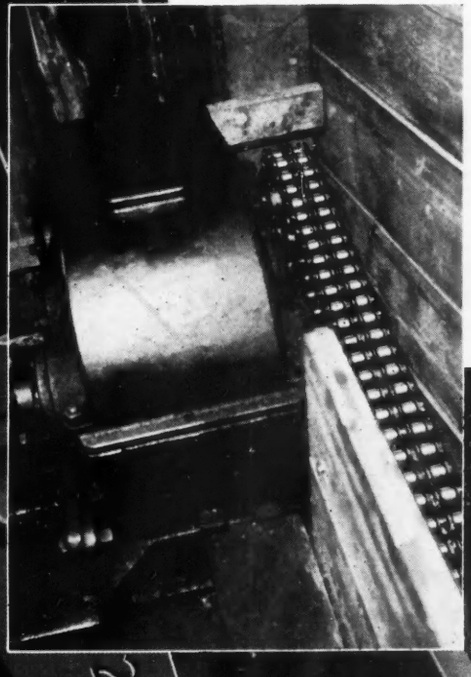
342

The "DEEP HOLE" Chain



Baldwin Super Service Oil Field Chain has helped drill nearly every record deep hole for years. "Straight" construction, accurate machining and specially heat treated side bars, pin bushings and rollers, give it a resiliency, a resistance to wear, and a rugged strength that make it first choice with drillers who know their chain. Below: this Baldwin multiple roller chain has been in operation 10 years without attention. If you want reliability—here it is!

Available in A.P.I. No. 3 and A.P.I. No. 4 sizes.



BALDWIN-DUCKWORTH CHAIN CORPORATION

Springfield, Mass.

Factories at Springfield and Worcester, Mass.

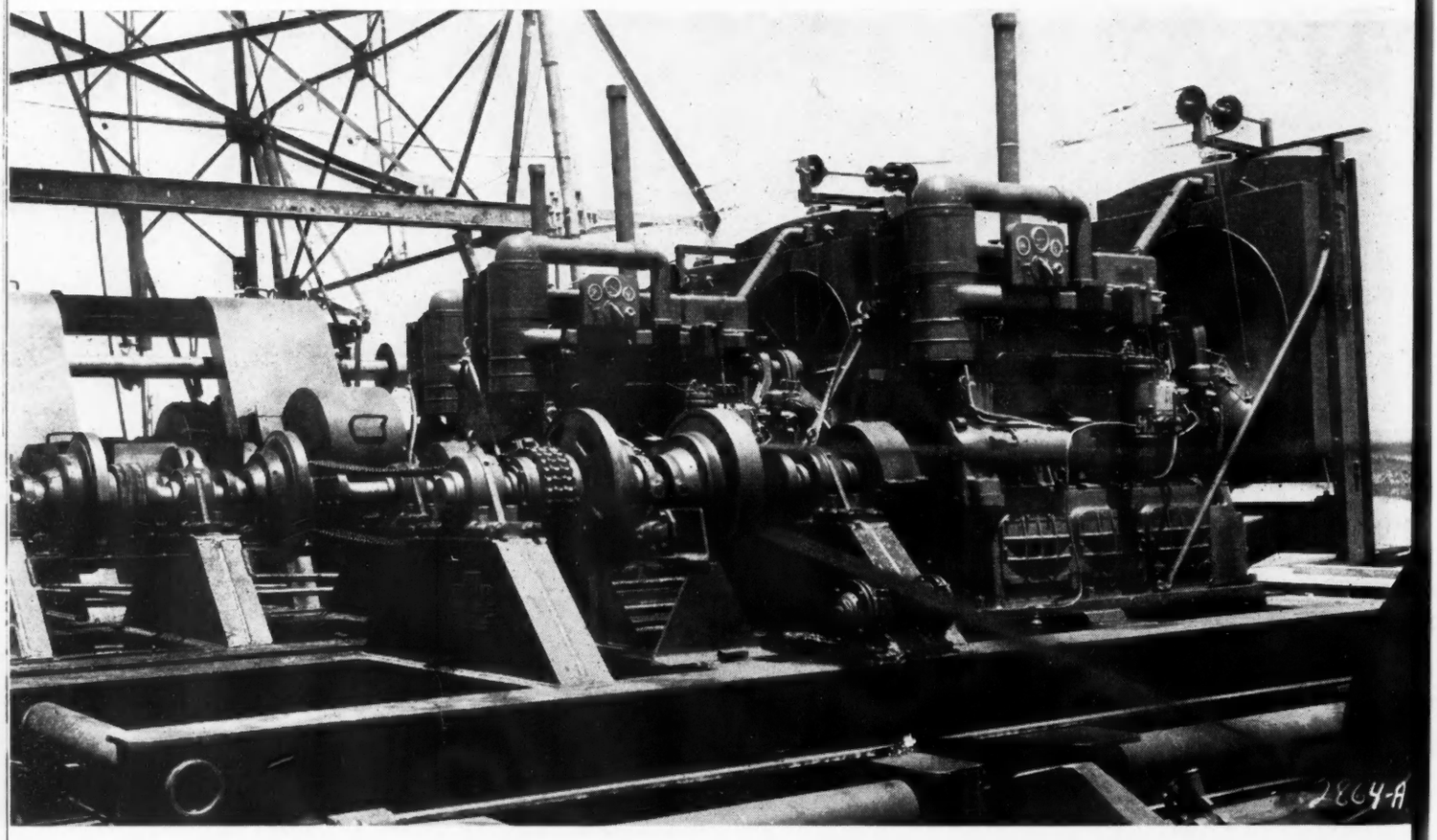
Factory Representative: Geo. J. Fix, Dallas, Texas
Export Department: Oil Industry Appliances Co., 39 Cortlandt St., New York City, N. Y.

BALDWIN

ask the Driller .. He Knows

Shaffer Portable Full Diesel Triple Engine Rotary Drilling Unit

In Operation for Claude Drilling Co., Tulsa, Okla., on Location Southwest of Cushing, Oklahoma



Shaffer Dual Engine Units have been operating with great success. The Triple Engine Drive affords additional horsepower for deeper drilling at very little extra cost—and without changing any of the assembled units. Adaptable to any draw works.

Low first cost, simple construction and easy portability; economical operation, great durability and flexibility are among the desirable features of this unit.

Write for Illustrated Folder.

SOME FEATURES

- *Multiple Roller Chain*
- *Cut Steel Sprockets*
- *Friction Clutches*
- *Self-Aligning Roller Bearings*
- *All Welded Structural Frames*
- *Alloy Steel Shafting*
- *Roller Chain Reverse*
- *Compounded Engines*

THE SHAFFER SPECIALTY CO.

BOX 136 WHITTIER STATION TULSA, OKLAHOMA 2440 EAST KING STREET

For Your 3 Toughest Lubricating Jobs, Use

COGLUBE

The Lubricating Gear Shield

Exposed gears . . . lubricated rock bits . . . drive chains—the toughest lubricating jobs in the field. But there is a lubricant specially made for just such jobs—CONOCO COGLUBE.

COGLUBE is a high-quality lubricant with better sticking qualities than ordinary gear shields. Water won't affect it, and it maintains a lubricating film that resists rupture from shock load and sliding action. It prevents scalding of gear teeth and guards against flat pins and cones on lubricated rock bits. COGLUBE comes in six consistencies, semi-fluid to extra heavy.

Write Dept. 18, Ponca City, Okla., for free book on applying COGLUBE and other Conoco Oil-Field Lubricants.

CONOCO OIL FIELD LUBRICANTS

CONTINENTAL OIL COMPANY - Est. 1875

CONOCO OIL FIELD LUBRICANTS IN STOCK AT THESE POINTS:

CALIFORNIA
Los Angeles

COLORADO
Craig
Denver
Ft. Collins
Ft. Morgan
Pueblo

KANSAS
Arkansas City
Chanute
Eldorado
Herington
Hutchinson
Independence

KENTUCKY
Owensboro

LOUISIANA
Lake Charles

MONTANA
Billings
Cut Bank
Great Falls
Lewistown
Shelby
Winnett

NEW MEXICO
Artesia
Farmington
Gallup
Hobbs

OKLAHOMA
Ada
Altus
Ardmore
Bartlesville
Chickasha
Duncan
Edmond
Enid
Guthrie
Muskogee
Oklahoma City
Okmulgee
Ponca City
Seminole
Tulsa

TEXAS
Amarillo
Beaumont
Big Spring
Borger
Breckenridge
Brownwood
Corpus Christi
Corsicana
Dallas
Fort Worth
Galveston
Houston
Longview
Marshall
McCamey
Mexia
Midland
Mineral Wells
Pampa
San Antonio
Tyler
Wichita Falls

UTAH
Salt Lake City

WYOMING
Casper
Glenrock
Greybull
Lovell
Lusk
Medicine Bow
Rawlins
Thermopolis
Worland

Unit with the cover removed illustrates how Hyatt Roller Bearings carry the loads of **"PHILLIE GEAR" REDUCERS** as used in oil field pumping service. This is one of the "PHILLIE GEAR" PRODUCTS built by the PHILADELPHIA GEAR WORKS. Another example of the wide-spread use of Hyatts for your protection against bearing wear and care.

Wherever

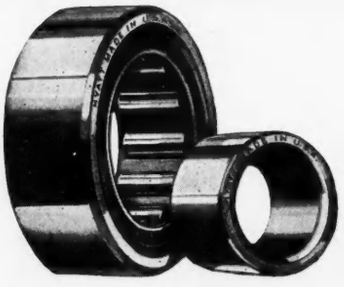
POWER

meets

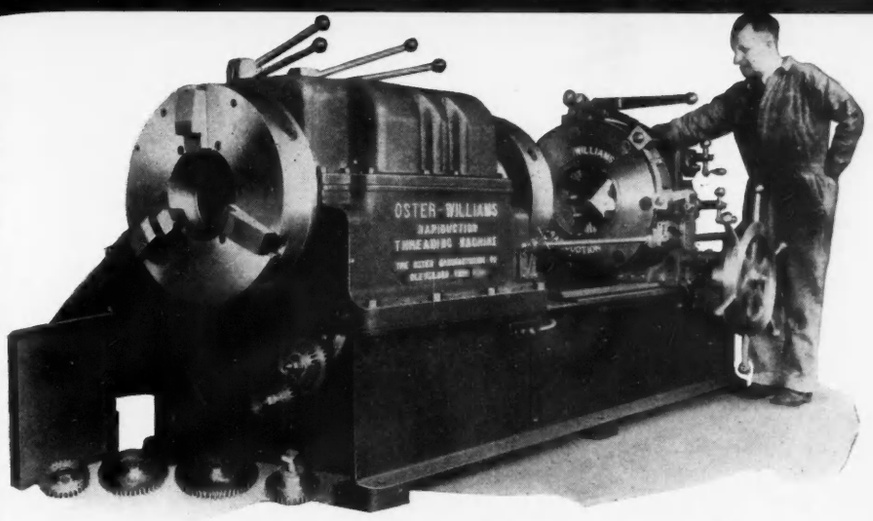
LOAD_

there's a job for

HYATT



Unleashed power flashes against static load... or sudden load crashes against idling power. They meet at the bearing points, where Hyatt Roller Bearings unflinchingly take the impact, while protecting related parts. Wherever weight, shock, speed, and dirt offer a worthy Bearing test, there's a job for Hyatt. Hyatt Roller Bearing Company, Newark, Detroit, Chicago, Pittsburgh, San Francisco.



Oster No. 8-XHD "Rapiduction" Pipe-Threading and Bucking Up Machine

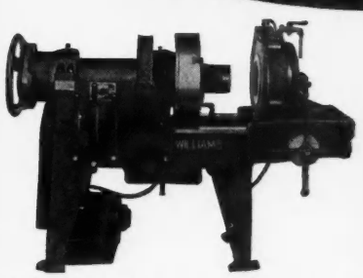
FOR EXTRA HEAVY-DUTY PIPE-THREADING and BUCKING UP

New . . . husky . . . powerful . . . built to withstand unusual strains . . . this is the machine the Oil Industry has been waiting for . . . a sensation when displayed at this year's Tulsa Exposition. Threads and bucks up all sizes of pipe from 2½" to 8⅝". A single die-head and one set of dies handle all sizes of the same pitch. Write for detailed description.

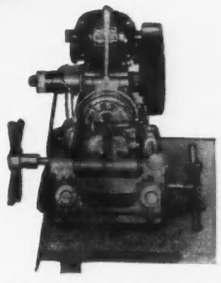
THE OSTER MANUFACTURING COMPANY

Sales Office: **2064 East 61st St., Cleveland, Ohio** • *Factories:* **Erie, Pa., and Cleveland, Ohio**

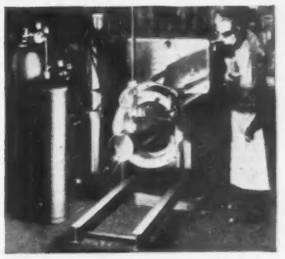
For 43 years specialists in the manufacture of top quality hand and power pipe-threading tools and machines, the products of The Oster Mfg. Co. are used on every continent of the globe. The efficient answer to virtually any kind of pipe or bolt threading job can be found in the OSTER-WILLIAMS line. Send your inquiries to *"Threading Headquarters."*



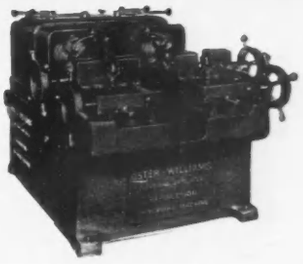
WILCO No. 706 . . . threads all sizes from 2½" to 6" in one die-head, without change of dies.



PORTABLE PIPE & BOLT THREADERS . . . the famous, popular Tom Thumb line . . . to be shown in two types.



No. 212 CUTTING MACHINE . . . *At Last!* a practical, simple-to-operate torch-cutter for producing pipe-intersections for welding. Here's a demonstration that can't fail to fascinate you.



PRODUCTION THREADING MACHINE No. 922 . . . a high efficiency, all-round performer, handling straight bolt work and practically every variety of threading job.

"RAPIDUCTION" DIE-HEAD . . Modernize your present 4" to 12" machines with one of these faster, simpler die-heads. Instant change of sizes without removing die-head or changing dies.

OSTER
THREADING EQUIPMENT
WILLIAMS

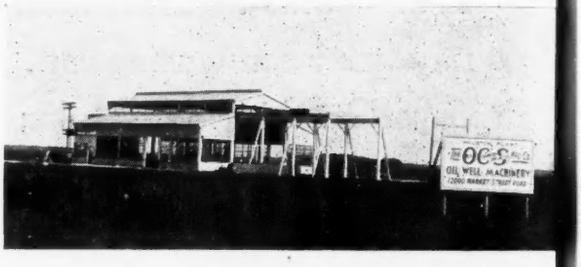
OCS

Coffeyville, Kansas

Long Beach, Calif.

At These Plants Has

Houston, Texas



For Sale

Better Well Operation

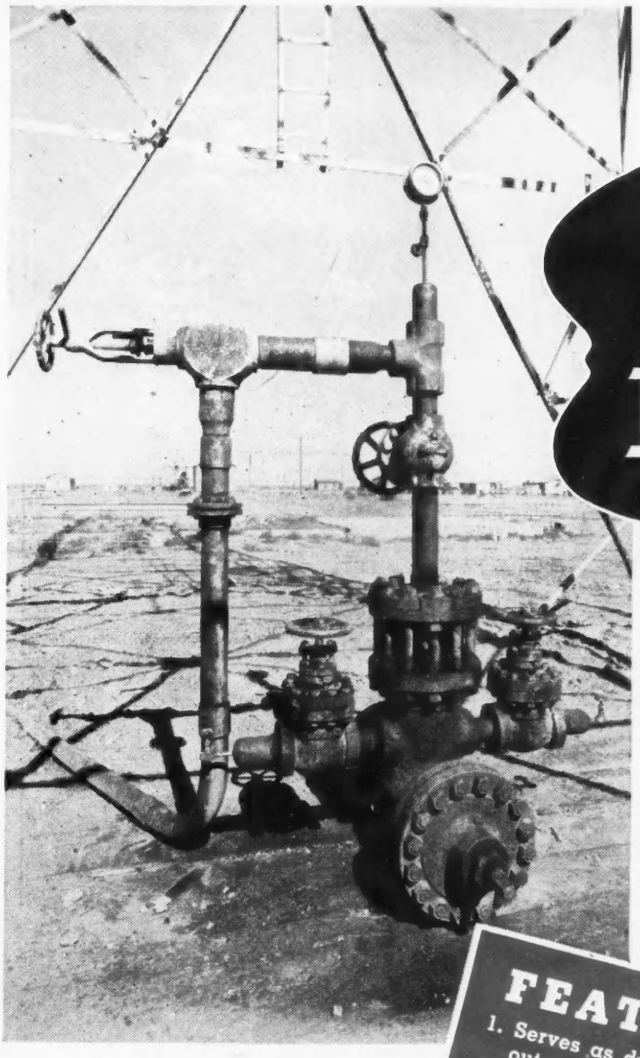
Manufactured by

THE OIL COUNTRY SPECIALTIES MFG. CO.

Our Catalog is filed in the COMPOSITE CATALOG

COFFEYVILLE, KANSAS

Long Beach, California; Wichita, McPherson, Kansas; Tulsa, Seminole, Oklahoma; Kilgore, Fort Worth, Houston, Corpus Christi, Texas; Hillman-Kelley, Inc., 2437-39 Hunter Street, Los Angeles, California.



This well need never be KILLED!

At no time during its flush life need this well ever be killed.

Completed with a Cameron Master Control Tubing Head, it may be re-entered safely at any time without killing, to correct unsatisfactory producing conditions.

Tubing is suspended, sealed and securely tied down *above* the blowout preventer rams. When these rams are closed, casing annular space is sealed off pressure-tight. *Pressure on tubing seal is entirely relieved. Pressure on casing outlets is entirely relieved.* If a Cameron Re-Setting Tubing Plug is on the bottom of the tubing, tubing can also be shut-in simply by raising it three feet and then lowering three feet through the closed rams. If a Cameron Re-Setting Tubing Plug has not been used, tubing can be shut-in at the bottom by running a removable tubing plug on a measuring line.

Well is then in condition to install stripper equipment above Master Control Tubing Head — permitting safe movement of tubing, or complete removal from the well, if necessary.

No other completion method offers as many advantages, or as complete control throughout the life of the well. The cost is no more, and frequently is much less than conventional well settings which afford no control beyond suspending and sealing the tubing string.

Full and complete information regarding this MODERN method of setting wells will gladly be furnished on request.

FEATURES

1. Serves as drilling-in blowout preventer.
2. Serves as blowout preventer while tubing well.
3. Permits completing well through Xmas tree.
4. Prevents pipe being blown from the hole.
5. Eliminates oil string master gate.
6. Permits use of inexpensive Xmas tree.
7. Provides double seal around tubing.
8. Shuts casing in without parting tubing.
9. Permits safe manipulation or pulling of tubing without killing well.
10. Invaluable when drilling-in under pressure.

BLOWOUT PREVENTION WHILE DRILLING-IN

Any Cameron Master Control Tubing Head, when equipped with rams to close around drill pipe, serves as a positive and dependable blowout preventer while drilling-in. When sand has been drilled to desired depth, and drill pipe pulled from the hole, tubing rams may be substituted for drill pipe rams. One set of drill pipe rams will serve a number of rigs. While rams are being changed after drilling-in, well may be safely shut-in below Control Head with a casing plug.

BLOWOUT PREVENTION WHILE RUNNING TUBING

While running tubing, also, the Cameron Master Control Tubing Head serves as a positive and dependable blowout preventer. Rams are designed so that they not only effect a pressure-tight seal around tubing, but also prevent tubing from being blown up the hole. The first collar moved up contacts recessed shoulders machined on the bottom of the rams, stopping all upward movement of tubing. Similar recessed shoulders on the top of the rams permit suspending long strings of tubing on the closed rams, if necessary or desired.

CAMERON IRON WORKS, Inc.

711 MILBY STREET — HOUSTON, TEXAS

EXPORT OFFICE: 74 Trinity Place, New York, N. Y.

MIDLAND: W. P. (Red) Knight — BEAUMONT: C. A. Muncey

OKLAHOMA and KANSAS: Carson Machine and Supply Co.

TO ASSURE GOOD CEMENT BOND *Gun-Perforate* AND WASH

NO 6 ... OF A SERIES OF GUN PERFORATOR APPLICATIONS ...

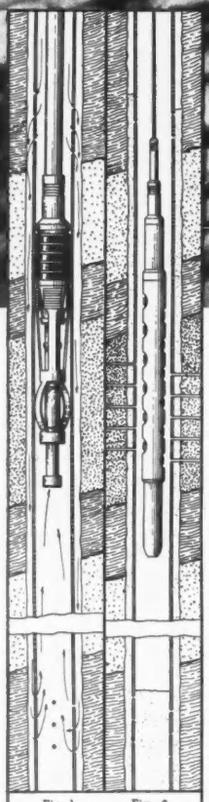


Fig. 1 Fig. 2

LEFT—Shows packer in position between two rings of perforations and formation being washed.

RIGHT—Shows casing after being cemented and Gun-Perforated.

SAYS "PERFORATING PETE":

"A lot of our customers are using Gun Perforator Service to help them get a good bond in their cement jobs. Here's how it's done:

"First, you have us make two rings of perforations, one ring at the bottom and the other at the top of the section behind which you want to cement—or, if you're on bottom with a casing shoe, only a single ring of perforations at the desired distance above the shoe will be necessary.

"Then set a packer like our Lane-Wells Circulation Type between your rings of perforations, and establish circulation down through the casing, out through the upper ring of perforations and along the outside of the casing, then inward through the lower ring of perforations and up through the tubing. (See Figure 1). You can do this either by swabs in the tubing or pump pressure applied to the top of the casing. This gives the formation a good wash, and at the same time the outward flow of liquid above the packer prevents sand or mud from heaving in on top and sanding up the packer.

"Now you're all ready to cement the entire section between the two rings of perforations, by any method you prefer, then—after testing for water shut-off—you call us in again to Gun-Perforate opposite your producing zone. (See Figure 2).

"Remember, too, that the accuracy of our Gun Perforator method makes it possible to space the shots closely or far apart, depending on the relative thickness of your oil sands, water sands and shale bodies."

Devices and method of operation licensed by Technicraft Engineering Corp. under Patents No.—1,582,184; 2,029,454; 2,029,478; 2,029,490; 2,029,491; 2,033,562; 2,043,340; 2,043,341; 2,043,400; 2,043,401.

Tomorrow's Tools—Today!

THE LANE-WELLS CO.

Gun Perforator Service

LOS ANGELES, CALIFORNIA • NEW YORK CITY, NEW YORK

THE LANE-WELLS CO. OF TEXAS • HOUSTON & CORPUS CHRISTI ● THE LANE-WELLS CO. OF OKLAHOMA • OKLAHOMA CITY & TULSA

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"LUFKIN UNITS MANUFACTURED AT LUFKIN, TEXAS BY LUFKIN FOUNDRY & MACHINE COMPANY, QUALITY MACHINERY SINCE 1900."

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WITHOUT experiment or loss of time or risk of investment on your part, your FRICK-REID Store has the right answer to the problem of how best to produce any given well.

The reasons for this are apparent. FRICK-REID represents the nation's foremost manufacturers of pumping equipment, who employ the best engineering and inventive minds in the supply and equipment industry.

And in any given producing area FRICK-REID assembles and maintains stocks of the types of equipment dictated by experience in many fields and favored by successful local operators.

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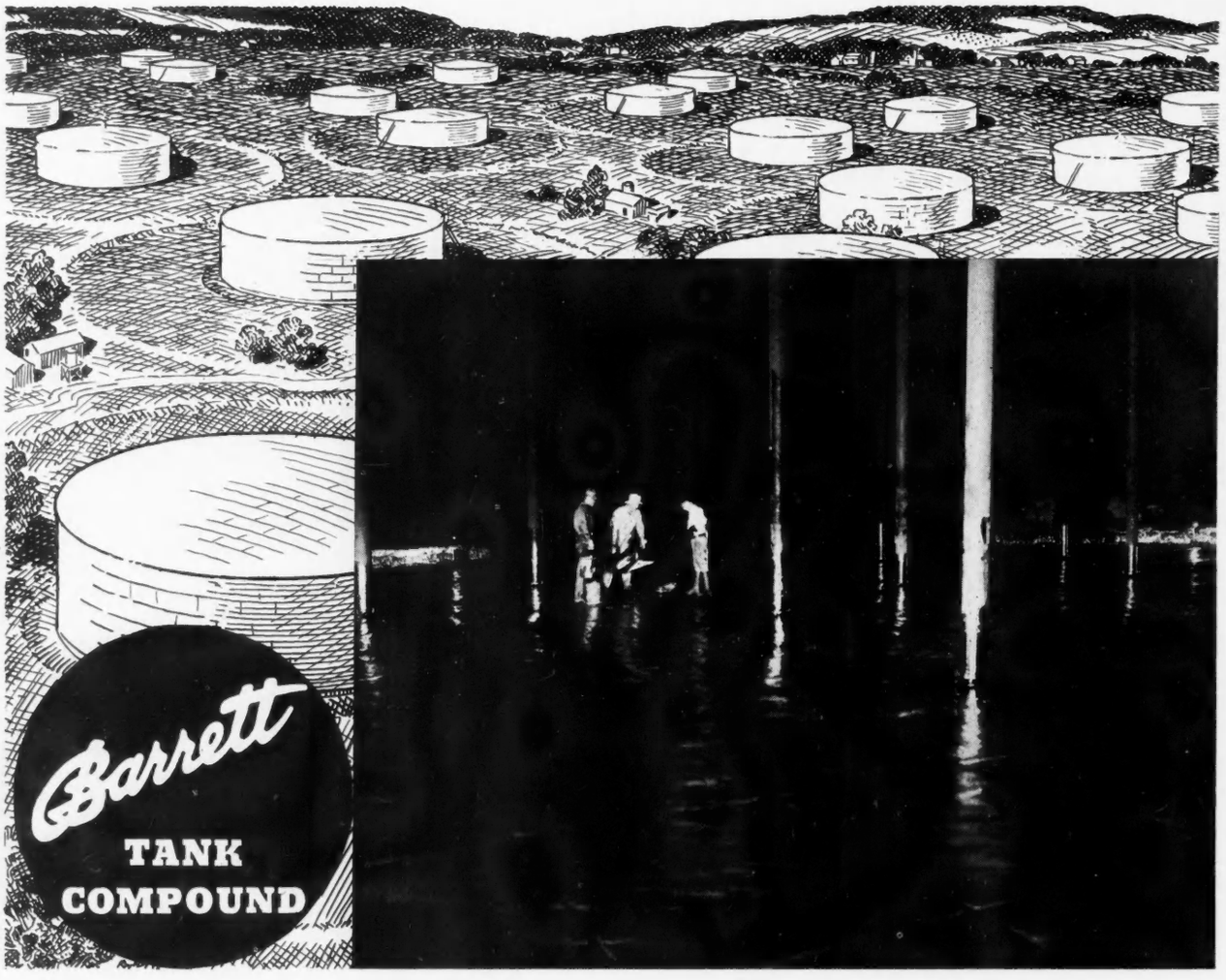
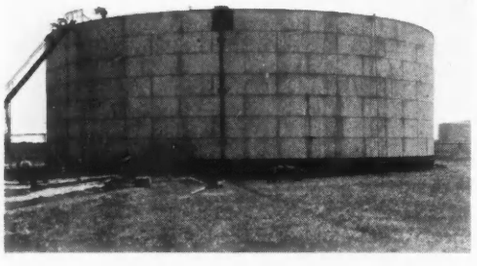


A Special Barrett Product for Protecting the Inside of Crude Oil Storage Tanks



A 55,000 gallon crude oil storage tank protected with Barrett Tank Compound

FIELD SERVICE: Carefully trained Barrett field men will gladly work with you, combining their special knowledge and experience with your familiarity with conditions along the right of way.

Barrett Tank Compound is the result of 82 years of experience in the development of protective products. It is scientifically processed coal-tar pitch made especially to protect the interiors of crude oil storage tanks against corrosion. More resistant to water absorption than any other type of product available for the same purpose, it is also dielectric—immune to electrochemical action resulting from varying conditions of the crude oil in storage. It has definitely proved its efficiency where extremely corrosive crude oil has been stored.

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Gaso Has Specialized in Oil Industry Pumps for 20 Years

Fig. 1740 Gaso Duplex Piston Power Unit

Chided by the other animals because she gave birth to only one cub, the lioness was quick to respond—"It is true that there is only one. But it's a LION!"

Gaso makes no claim to great quantity production. But it does submit that through a policy of strictest concentration, it has attained supremacy in the specialized field of oil industry pumps. Every GASO Pump is considered an individual responsibility, calling for the observance of exacting standards by an organization long experienced in the rigors and requirements of oil-industry service.

It is Gaso's constant aim to give added significance to the simple statement, "It's a GASO!" . . . Gaso Pump & Burner Mfg. Co., Tulsa, Oklahoma. Export Office: 149 Broadway, New York.

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for every oil industry need

A TWO-FISTED GEAR UNIT for Oil Pumping Service

WHETHER you need a slow speed drive for the steady pumping of light producers, or equipment with sufficient power and strength to lift large volumes of oil from heavy producers . . . you'll find Westinghouse gear units most efficient and economical.

Westinghouse OP gear units are two-fisted gear drives that operate equally well in either right or left hand applications. The brake mounting can readily be changed in the field . . . no skilled mechanics or special tools are needed.

Double-extended high speed and low speed shafts . . . smooth single helical gears, BPT heat-treated gears, pinions and shafts . . . tapered roller bearings . . . an oil settling chamber to keep foreign matter out of the lubricant . . . housings reinforced at points of stress and with especially wide bases . . . these are a few of the features to be found in Westinghouse gear units.

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1

Replacement of equipment made of natural rubber compounds is a tremendous annual expense to the Petroleum Industry. OKEH "DuPrene" (1000-D) is a compound which has all of the physical properties of rubber, but excels, in that it will not fail when exposed to oil, gasoline, sunlight and high temperatures.

We welcome inquiries regarding the suitability of this man-made rubber for unusual service conditions.

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THESE FOUR OKEH "DUPRENE" PRODUCTS ARE SETTING PERFORMANCE RECORDS IN THE FIELD

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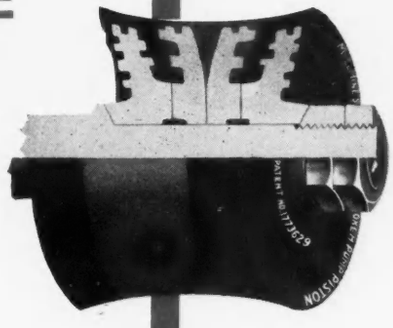


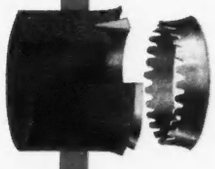
1. OKEH Re-Nu Pistons are recommended for use on Handling Pumps in producing fields. They are made of Chrome-Nickel steel and 1000-D "DuPrene." Install Re-Nus on your pumps and increase efficiency, lower maintenance costs.

2. Trasco Hose, which is also made of oil-resisting 1000-D "DuPrene," has found many diversified applications in the oil field.

3. The OKEH HI-PRESSURE PISTON is all that the name implies. It is recommended for use on extreme high pressures and abnormal drilling conditions. If you drill in with oil, specify this piston made up in 1000-D "DuPrene" Compound.

4. OKEH Polish Rod Packing is made up in 1000-D "DuPrene" Compound. Under the most adverse conditions this packing gives long, continuous service. A set which was installed in January, 1935, is still in service.

4



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California Reports on DEEPWELL

● A California Chain Distributor reports: "Have been checking from time to time on the test that has been in progress for some months. The general conclusion is that it is the most satisfactory run that the testing company, one of the largest out here, has had on *ANY CHAIN* so far."

Fine finish, high strength, and the new Rex method of lubricating the pins make Rex Deepwell the lowest-cost chain per foot of hole for deep, high-speed, hard drilling . . . Insist on Deepwell for your high-speed, deep well rigs.

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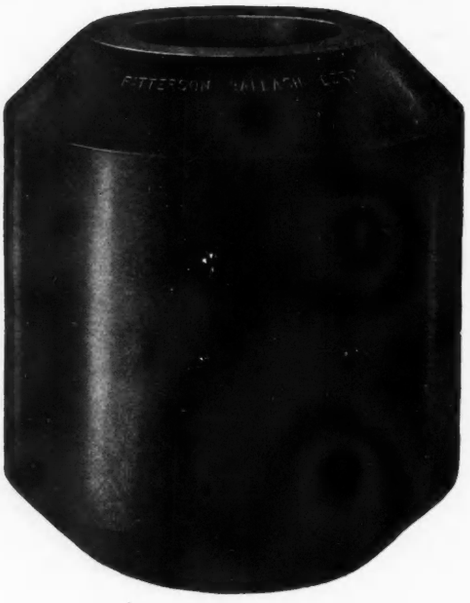
What $144.00 worth of Patterson-Ballagh Stabilizers* accomplishes in Oklahoma City Field



THERE has been an epidemic of twisted, crooked drill pipe and bent Kelleys in the Oklahoma City field. This has resulted in bad fishing jobs that are expensive to drillers and oil companies. In approximately 65 wells the drill pipe needed to be straightened.

The use of six 6″ x 10¾″ Patterson-Ballagh Stabilizers costing $144.00, installed in connection with Patterson-Ballagh Protectors, has entirely eliminated this trouble. This cost is greatly reduced in proportion to the number of wells later drilled with the same protected drill pipe.

We have not found a single instance where pipe has been whipped off or twisted after installation of these Stabilizers.

Patterson-Ballagh Protectors and Stabilizers are more than mere rubber. They are an absolute protection, an insurance policy that costs nothing when you consider the savings effected.

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** The Patterson-Ballagh Stabilizer is a thick-walled, seamless rubber protector used in place of the standard protector when drilling in large casing. Stocks are available in all fields.*

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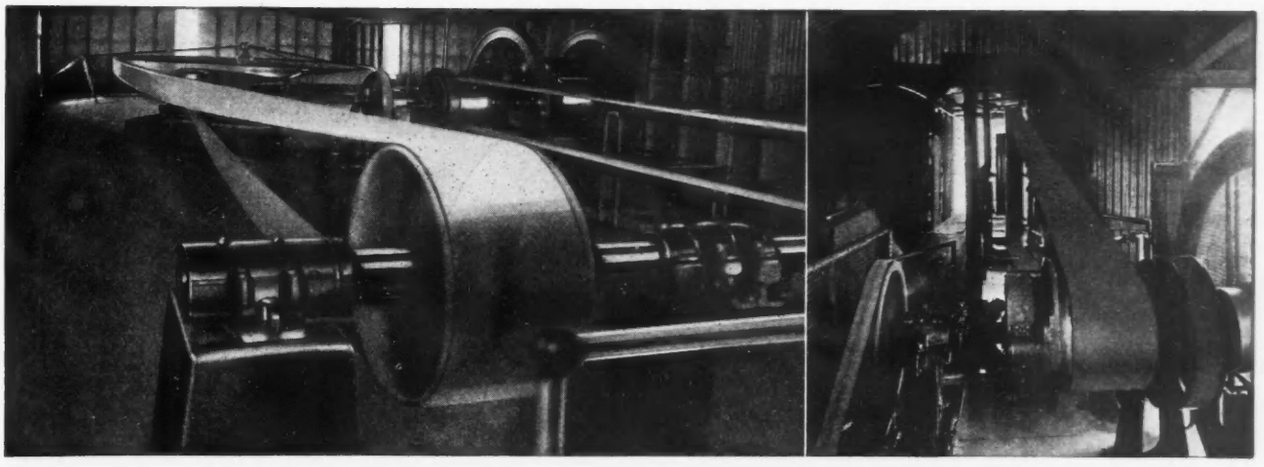

Here's evidence that wherever drives are hardest in the oil country, you'll find Thermoid Belting on the job. The old timers recognize this fact. After sad experience with belting that just couldn't "take it" on a tough pumping job, they've found Thermoid belting stays with them where others failed.

That's because Thermoid engineers camp right beside the pumps. They study the requirements right on the ground, examining belting on the pulleys and determining every severe service condition which good belting must endure.

Thermoid "Oil Country" belts are constructed with a thorough knowledge of service facts. This "field engineering" has enabled Thermoid to steadily improve pumping belts year after year, and to produce grades for every requirement.

Thermoid's Oil Country Friction Materials Data Book contains much useful information on your braking problems. Write Thermoid, Trenton, New Jersey, for your free copy today.

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FOR THAT "BETTER" SERVICE YOU'RE SEEKING

The worth of your machines is measured by their performance—the kind of work they do—the way they stand up—the cost of maintaining them. Put PRECISION Bearings in them, and you'll add a very substantial extra-dependability that will go far toward assuring that "better" service which makes for lower costs and larger profits.

Summed up, PRECISION—in NORMA-HOFFMANN Bearings—means longer life, less liability to shut-down losses, lowest cost per bearing per year of service. This is a fact attested by actual records in hardest service over a long period of years. It is good business, as well as good engineering, to use PRECISION Bearings.

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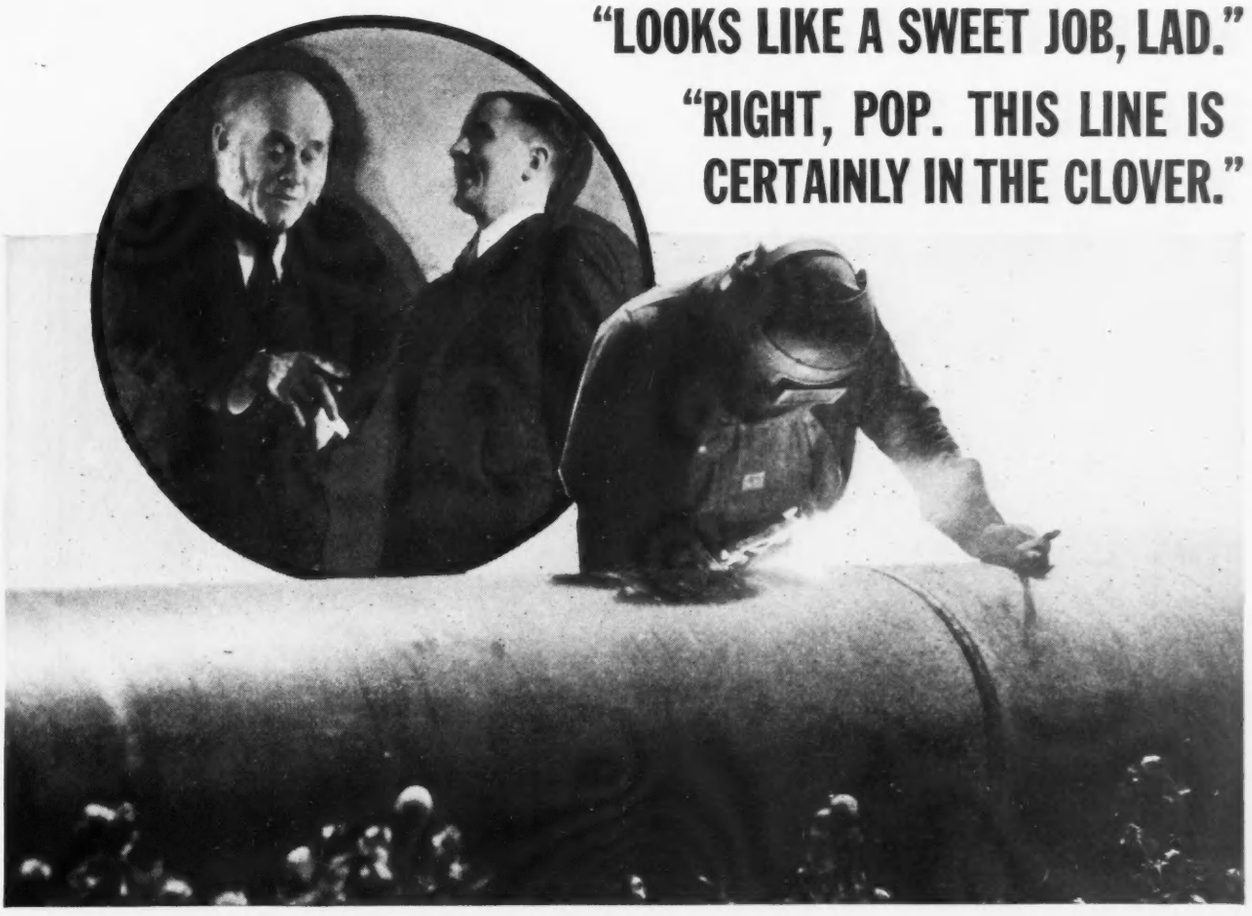
"NORMA-HOFFMANN"

NORMA-HOFFMANN BEARINGS CORPORATION, STAMFORD, CONN., U.S.A.

"LOOKS LIKE A SWEET JOB, LAD."

"RIGHT, POP. THIS LINE IS CERTAINLY IN THE CLOVER."



Along the firing line of the Zionville-Detroit, 22-inch gas line. Each operator "Shield-Arc" welded 22 to 25 joints per day. Constructed and owned by: Michigan Gas Transmission Corp.; Gen'l Contractors: Bibb Contracting Co.; Welding Contractors: H. C. Price, Inc.

"Follow this line and you'll go in a bee-line through beds of clover from Zionville, Ind., to Detroit, Mich.—230 miles of 22-inch pipe. And need I say that every welded joint was made by the Lincoln "*Shield-Arc*" process with "Fleetweld" electrode? Yes, sir, that's another line whose welds will reach doomsday looking even brighter and sturdier than the pipe itself!"

"Why not acquaint yourself with the facts behind shielded arc welding? See how strong, dense, ductile and corrosion-resisting welds are that are made by this process. Users are in the clover and four-leaf clover at that! Just send the coupon." THE LINCOLN ELECTRIC CO., Dept. L-276, Cleveland, Ohio. Largest Manufacturers of Arc Welding Equipment in the World.

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THE ONLY *complete* WELDER

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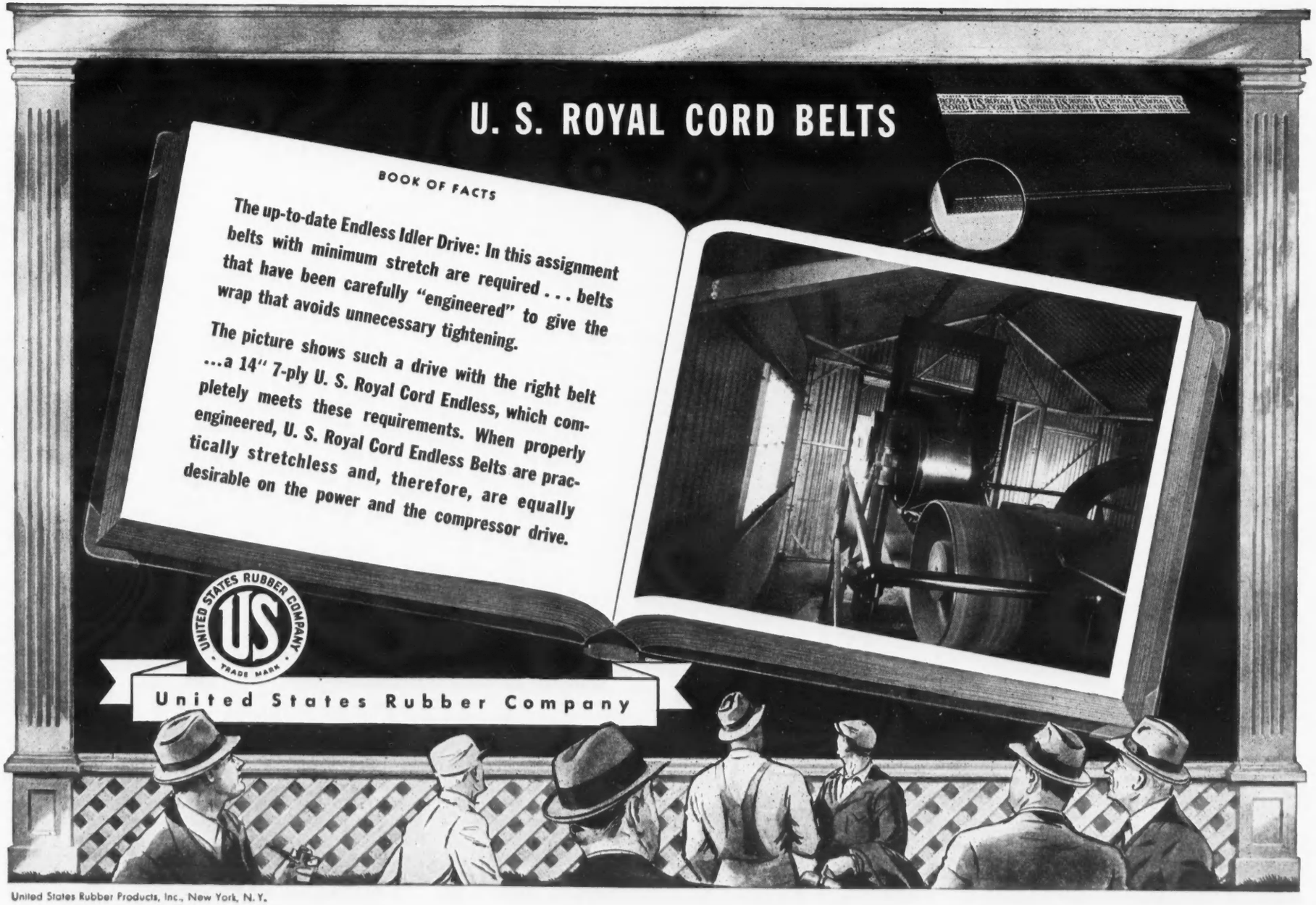
U. S. ROYAL CORD BELTS
BOOK OF FACTS
The up-to-date Endless Idler Drive: In this assignment belts with minimum stretch are required . . . belts that have been carefully "engineered" to give the wrap that avoids unnecessary tightening.
The picture shows such a drive with the right belt ...a 14" 7-ply U. S. Royal Cord Endless, which completely meets these requirements. When properly engineered, U. S. Royal Cord Endless Belts are practically stretchless and, therefore, are equally desirable on the power and the compressor drive.
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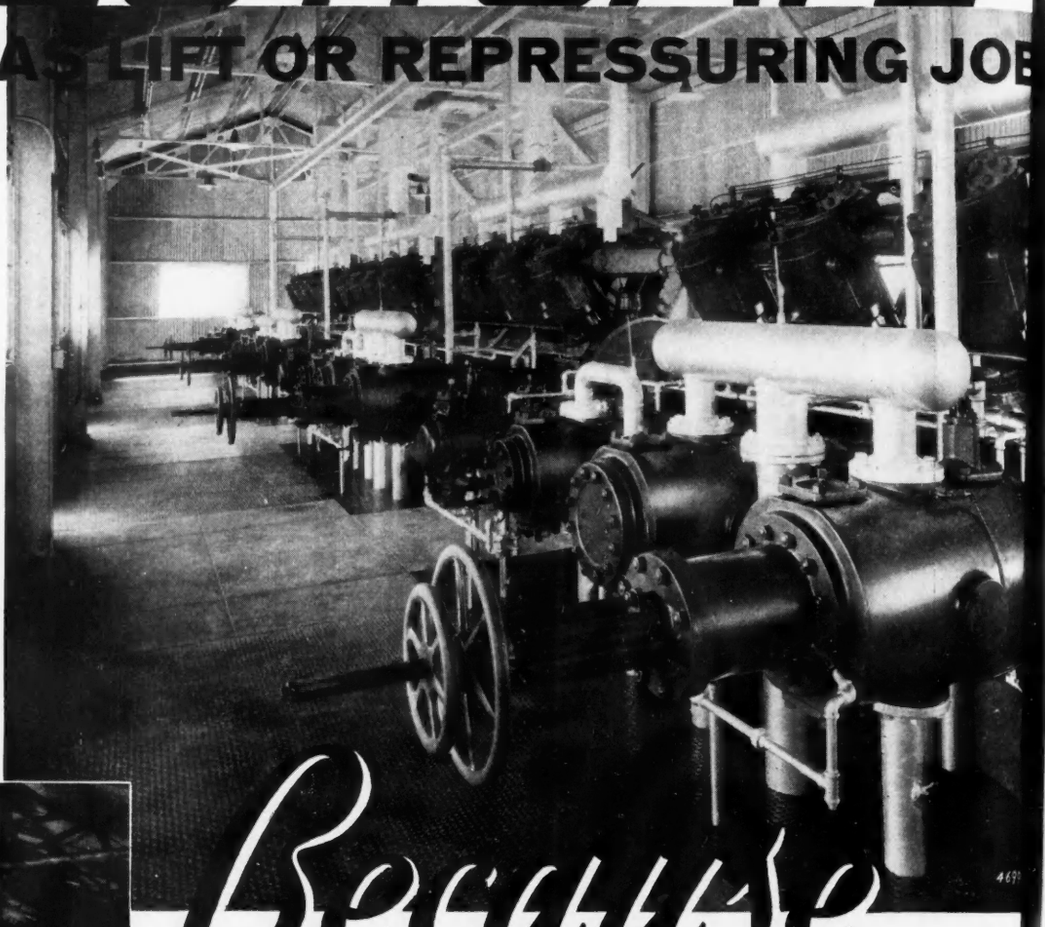
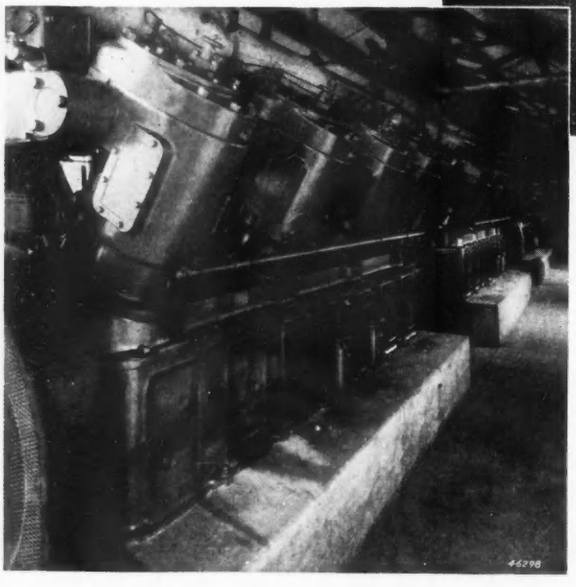
THE XVG

FOR YOUR GAS LIFT OR REPRESSURING JOB



TYPE XVG gas-engine-driven compressors offer you a practical and economical solution of production problems.



EVERY XVG of the several hundred now in operation has made a friend of its owner.

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2. **Maintenance costs are low** on account of large bearings, simple and reliable lubrication system, and small power cylinders.
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Ingersoll-Rand

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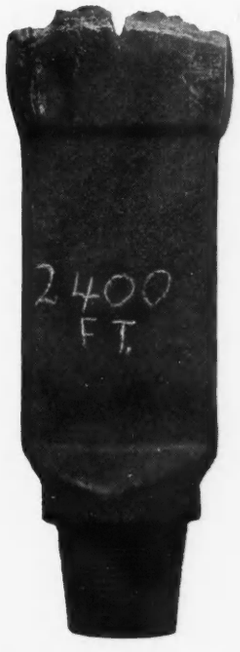
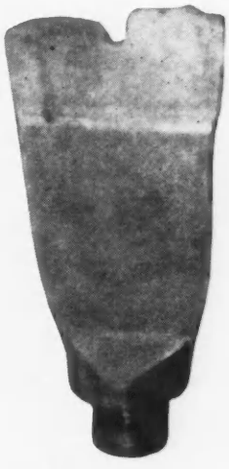
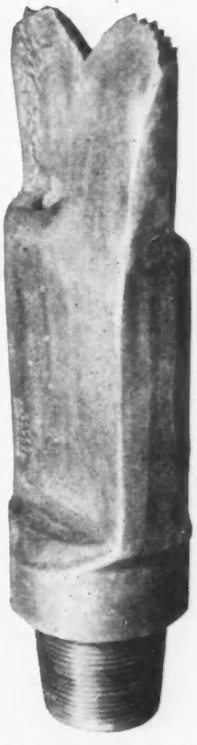
HALF-MILE HOLES



These Haystellited bits drilled adjacent holes at Joinerville, Texas. Both started at 80 feet below surface; one went to 2480 and the other to 2580 feet.



This 14-inch Haystellited bit made 2180 feet at Hackberry, La.



This 9⅞ inch Haystellited bit made 3050 feet in 49 hours at Tomball field.

. . . with Haystellite

• Greater footage of out-to-gauge hole per bit is why experienced drillers insist on bits hard-set with Haystellite Inserts and hard-faced with Haystellite Composite Rod. From the record of Haystellite on thousands of wells they know that this cast tungsten carbide diamond substitute is uniform and dependable—every batch has the same hardness and toughness and the same long-wearing qualities.

Haystellite Inserts and Haystellite Composite Rod and their proper use for best results are described in the 36-page book "Haynes Stellite Products in the Oil Fields." Write for your copy today. This will not obligate you at all.

PRODUCT OF A UNIT OF UCC UNION CARBIDE AND CARBON CORPORATION

HAYSTELLITE TRADE MARK REG. U.S. PAT. OFF.

The cast Tungsten Carbide diamond substitute

HAYNES STELLITE COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

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Haynes Stellite Welding Rods and information on other Haynes Stellite Products also are available through the 42 apparatus shipping points of The Linde Air Products Company

Running JONES RODS

. . runs pumping costs DOWN!

● Jones Rods are making some excellent records. Rod breaks are being reduced and pumping costs are being lowered because Jones Engineering Service gives you an accurate, thorough-going analysis of pumping conditions and Jones Sucker Rods give you the right rod to fit the pumping conditions.

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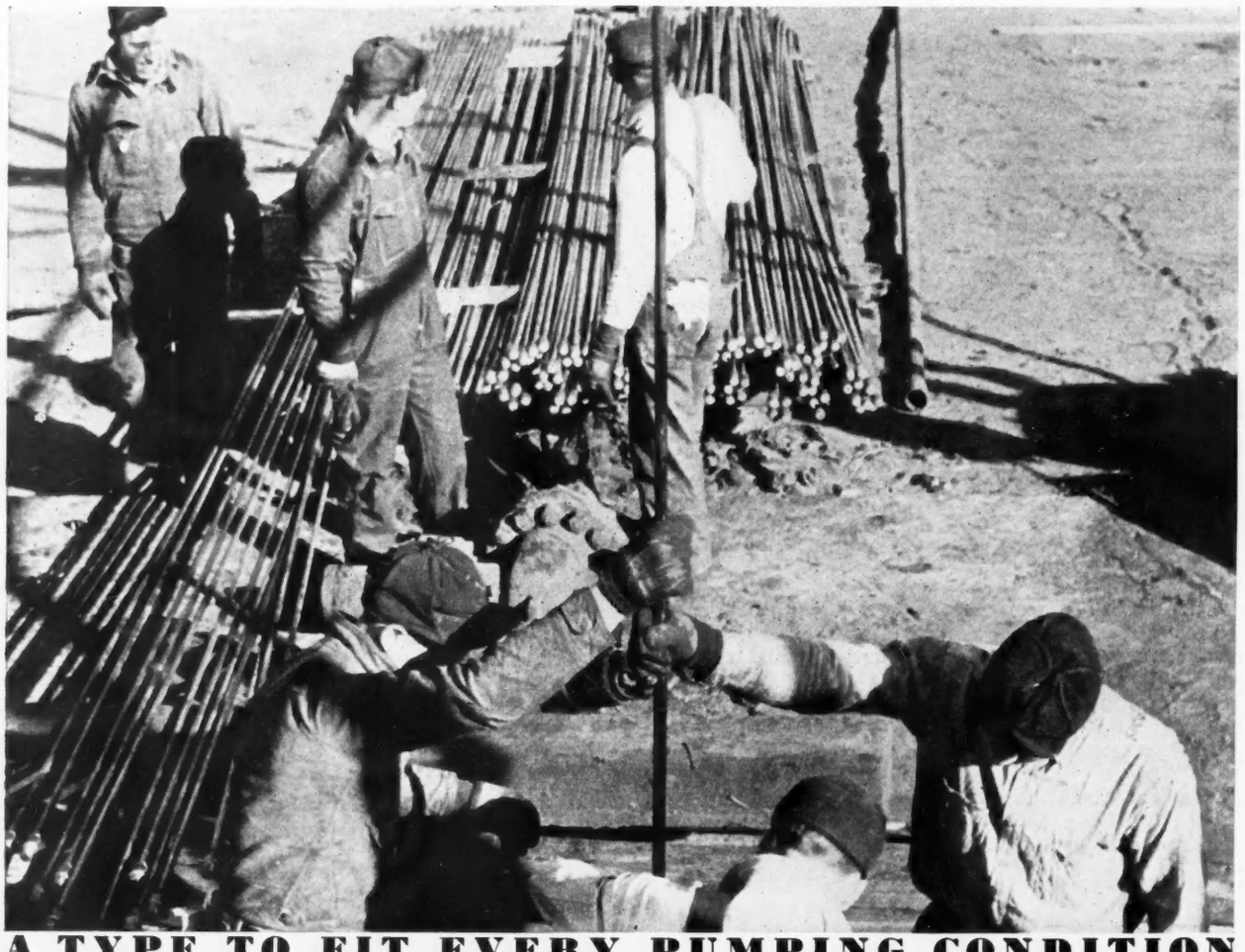

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THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

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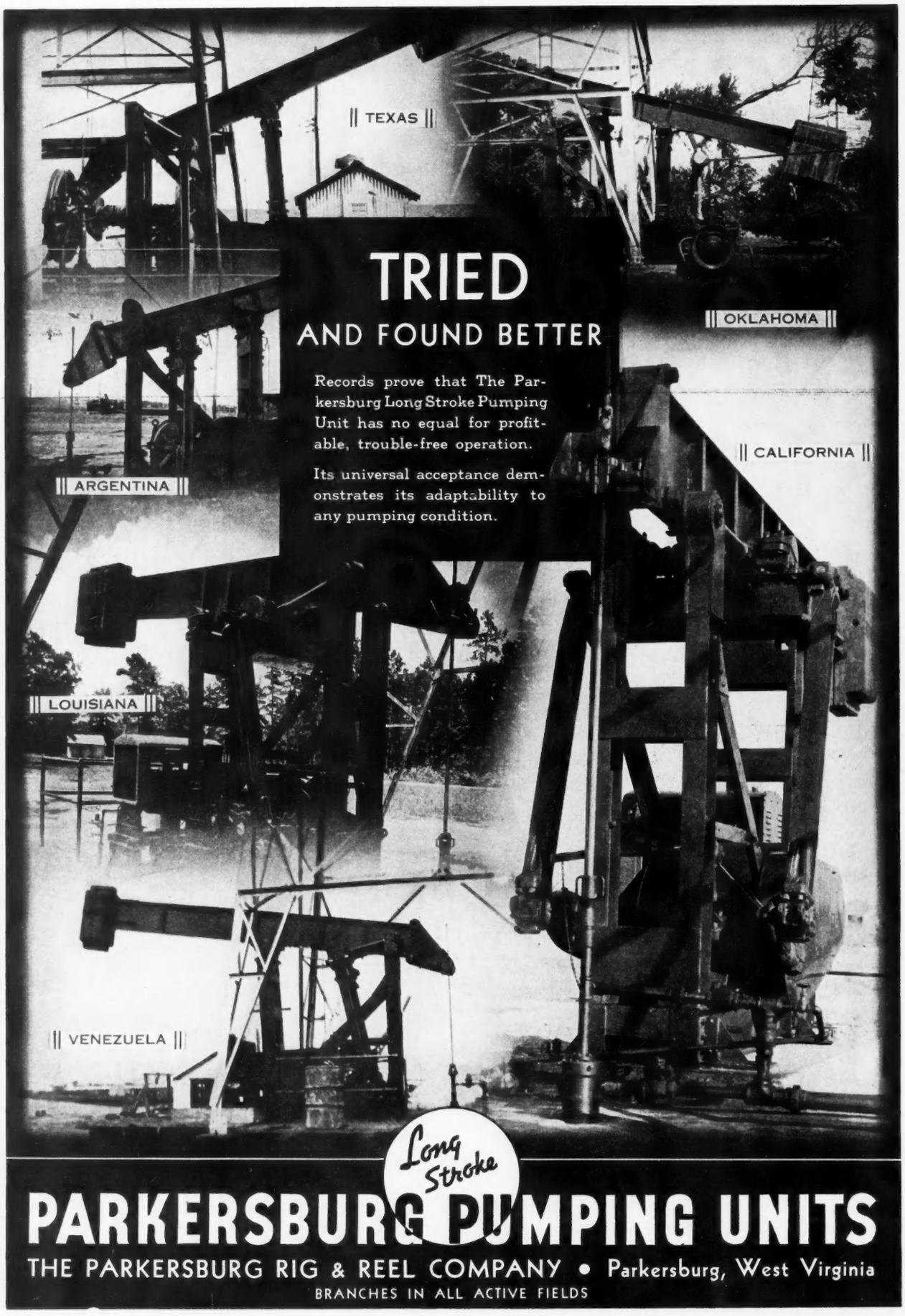
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THE OIL WEEKLY

FOR OIL AND GAS PRODUCERS
AND PIPE LINE MEN

ENGINEERING NEWS STATISTICS

WARREN L. BAKER, Editor.

. . . this Week

STATISTICS for the month of June continued favorable, and as a result the industry passed a successful first six months of 1936. The demand for petroleum during the six months broke all previous records. There was an effective balancing of supply with demand, with the results that the markets were favorable and earnings of oil companies showed improvement. The only department showing gains not in proportion to the general situation was drilling, which was up sharply, registering a 20 percent increase. **Page 40.**

A PLAN has been adopted for the co-operative development of the Buena Vista Hills, California, field. The plan is one entered into between lessees of government land and owners and operators on private acreage. The purpose of the program is the conservation of oil and gas, especially in the deeper horizon. The program is being hailed by government officials as the most important co-operative one since adoption of the North Kettleman Dome plan. **Page 38.**

THE Texas Railroad Commission has issued an order intended to prevent the movement of hot oil under the guise of legal production from adjacent states into Texas. It is required that each shipment of oil crossing the state line into Texas carry with it a certificate from the conservation officials of the state from which it was produced. This certificate must show the source of the oil and other pertinent data. **Page 38.**

IN the past the cutting back of the per well allowable production in the East Texas field has prolonged the flowing life of many wells. However, the commission has about run its course in reducing the per well allowable, as the average in the field today is 20.56 barrels and a state law prohibits cutting back beyond 20 barrels. Thus it appears that each new completion soon will be increasing the allowable production from the field. Past history of the field has definitely indicated that an increase will cause a more rapid decline in bottom-hole pressures, which are now 1182 pounds. This should mean that more wells must depend upon artificial lifting methods. **Page 100.**

RODESSA will be the principal question considered at the next Texas statewide hearing, to be held at Austin on July 16. Operators in the field have requested special rules and regulations to govern drilling and producing operations. The field has been operating under general state proration orders. **Page 38.**

SOME unusual progress in lowering lifting costs through individual well studies has been made by a number of companies during the past year. These modern well studies are being used to check a number of important pumping operations. Indications are that there will be considerable expansion of this type of work, and undoubtedly producers will enjoy increased recovery at lower cost and improved lifting equipment. **Page 51.**

PUMPING equipment is subjected to severe corrosion in many fields, but considerable success has been made in retarding its action. Metallurgical progress has been the chief means of attacking this pumping evil, and no doubt will be more widely employed in the future. However, operating practices and other methods have also proved of vital assistance, and there are a number of cases where they have resulted in great savings. In different areas the action of corrosion on lifting equipment varies from that in other regions, and the particular problem must be studied. Both surface and underground equipment are subjected to corrosion, with the action on the latter type of machinery more severe. **Pages 75, 80, and 98.**

KEEPING of adequate records on production performance of wells and the service of equipment is an important function in efficiently operated producing departments. There are many advantages to be gained, both mechanically and financially, from such efforts. It is necessary the data be complete, yet the task of keeping the information must not be so burdensome as to offset the benefits. **Page 112.**

SINCE sucker rods are such a vital part of all pumping operations, it is of utmost importance that they be handled carefully. Successful rod service may be expected only where the rods have no permanent deformation or surface imperfections. A survey has shown that 75 percent of the common fatigue failures are due to carelessness in handling the rods after they have been fabricated. Small nicks may start progressive fatigue in action. A number of instructions, if adhered to, will assure the overcoming of most sucker rod breaks. **Page 88.**

The Oil Man's Calendar

JULY 31	Interstate Oil Compact Commission, Dallas, Texas.
AUG. 11–16	Michigan Oil and Gas Exposition, Mt. Pleasant, Michigan.
SEPT. 7–12	World Power (Fuel) Conference, Washington, D. C.
7–12	American Chemical Society, Pittsburgh, Pennsylvania.
16–18	National Petroleum Association, Atlantic City, New Jersey.
	American Petroleum Institute, Division of Production, Mid-Continent District, Probably at Oklahoma City.
OCT. 5– 9	National Safety Congress Petroleum Section, Atlantic City, New Jersey.
	American Institute of Mining and Metallurgical Engineers Cleveland, Ohio.
NOV. 9–12	American Petroleum Institute, 17th Annual Meeting, Chicago, Illinois.
NOV. 30– DEC. 1	Independent Petroleum Association of America, Biltmore Hotel, Oklahoma City, Oklahoma.
NOV. 30– DEC. 4	American Society of Mechanical Engineers, Annual Meeting, Society's Building, New York.

Hot Oil Order

TO PREVENT OTHER STATES SHIPPING INTO TEXAS

AUSTIN

THE Texas Railroad Commission has issued a new order intended to prevent the movement of hot oil under the guise of legal production from adjacent states.

The new order, effective as of July 24, requires that each shipment of oil crossing the state line into Texas carry with it a certificate from the conservation officials of the state from which it was produced. This certificate must show the source of the oil, including the particular lease from which the production was derived, and must bear an affidavit showing the production was legal.

Such affidavits are required on all oil moved, whether it be by pipe line, tank car, truck or barge. If the oil is not consigned, however, to a destination within the boundaries of Texas, but continues across Texas into a third state, then such an affidavit is not required.

This program was suggested at the last statewide proration hearing by R. E. Hardwick, Fort Worth attorney representing several of the major operators in East Texas. Hardwick pointed out that the railroad commission had no means of verifying the legality of such production and suggested that some order be issued that would furnish this information.

In the findings of fact issued with the order the commission pointed out:

"That water has been heretofore imported into this state in railway tank cars and billed as crude petroleum oil. That oil imported into this state has various gravities and resembles that of Texas oil, thereby making it impossible for the railroad commission of Texas and its lawfully constituted agents to distinguish between Texas oil and foreign produced oil. That under existing conditions it is possible for Texas crude petroleum oil, produced in excess of the allowable to be substituted for water imported into this state and billed as crude petroleum oil and products and by-products thereof, or for imported crude petroleum oil and the products or by-products thereof, in violation of the conservation laws of the state of Texas. That it is necessary to have a more complete and definite check upon the crude petroleum oil and the products and by-products thereof being imported into the state of Texas than is now authorized."

NEW TRUCK ORDER

Is expected to retard hot oil movement by trucks

AUSTIN.

A NEW manifest form to cover truck movements of oil and products is provided in an order of the Texas Railroad Commission issued last week. This order is to become effective on July 18.

The new manifests are required in quadruplicate on specially watermarked paper and the figures must be perforated through the report.

The purpose of this program is to prevent forgeries of commission signatures to manifests, and violation of this order will thus constitute a felony, since the penalty for forgery is a maximum of two years in the state penitentiary.

The operators affected by this order must retain the copies they receive for a period of two years and have them available for inspection at any time. The driver of the truck must carry the original and duplicate and the latter must be signed by the consignee taking all or part of the shipment. The duplicate copies must then be filed with the commission at Kilgore within 36 hours after the movement begins.

TEXAS HEARING

Rodessa to be principal question considered

AUSTIN.

CONDITIONS in the Rodessa field will be the principal subject before the Texas Railroad Commission at the statewide hearing scheduled for July 16, at Austin.

One hearing on the Rodessa field was held last fall at Marshall but because there was no production within the boundaries of Texas at that time, the commission declined to issue orders based on that evidence.

Operators in the field are now governed by the general conservation regulations and many of the larger producers have urged the commission to provide special rules for the field.

Most of these large lease holders have urged the commission to install a 20-acre spacing rule in the field, pointing out that the statewide rule allows the drilling of one well to two acres, and that should the field be developed on that basis congested drilling would result. They explain that Rodessa wells are expensive to drill and that unless total per-well recovery is high, there will be no profit from the operation.

The commission has consistently reduced Rodessa allowables to conform to those provided in orders issued by the Louisiana Conservation Commission for operations in that part of the field which lies beyond the boundaries of Texas. This has brought allowables down from 1750 barrels per day to 275 barrels per day. Some of the wells, however, have been required to produce less oil under that regulation which allows a maximum gas-oil ratio of 2000-1 or a total displacement daily equal to that of the well producing the highest allowable with a 2000-foot ratio.

Intrusion of water into the area has probably done much to alleviate the situation and has certainly been a factor in delaying the hearing on this field.

Another cause for delay has been the reluctance of Louisiana conservation officials to join with the Texas Railroad Commission in working out uniform regulations for the entire field.

An invitation has again been extended to these officials by Commission Chairman Ernest O. Thompson, but it has not yet been accepted. It is believed that Louisiana will certainly send observors to the hearing next week.

Because conditions in the other parts of the state have not altered materially during the past 30 days, no seriously controversial issues are likely to arise.

Southeast Texas operators are expected to protest the reductions ordered for fields in that area, but it is likely that they will present more of a formal protest rather than an active demand for higher allowances.

ADOPT UNIT PLAN

Buena Vista Hills to be cooperative development

WASHINGTON.

APPROVAL by President Roosevelt of a plan-agreement for the cooperative development of the Buena Vista hills (California) oil and gas field was announced by the navy department July 9, bringing to an end more than three years of negotiation between lessees on Naval Reserve Number 2, under the jurisdiction of the secretary of the navy, and lessees outside the reserve, under the jurisdiction of the secretary of the interior, and representatives of the two departments.

The plan-agreement, it was explained by Admiral William H. Standley, acting secretary of the navy, is the outgrowth of a plan entered into between the government's lessees and owners and operators on private lands interspersed between the government-owned tracts, having for its principal purposes the conservation of oil and gas on both government and private lands, especially in the deeper oil horizons which are not now undergoing development, and to retard unrestricted drilling and provide an orderly development program for the whole area.

It is believed, Admiral Standley declared, that execution of the agreement will exercise a salutary effect on the petroleum industry in California.

In recommending that the President approve the plan, Secretary of the Interior Ickes declared that "In my opinion the plan for the Buena Vista Hills oil and gas field, viewed from the standpoint of the amount of acreage committed, of the amount of acreage already definitely proven, and of the amount of acreage involved having definite geologic potentialities, represents one of the most important contributions to cooperative or unit development since the formulation of the North Dome Kettleman Hills plan."

The plan embraces a total of 39,184 acres of oil lands, of which 10,446 acres are government lands in the petroleum reserve; 4000 acres are government lands outside the reserve and 24,738 acres are privately owned, 18,735 acres of them within the reserve.

Barriers Arise

ASK RULINGS ON OKLAHOMA CITY FIELD REGULATIONS

OKLAHOMA CITY.

LEGAL barriers are ahead for both producing and drilling in the Oklahoma City field. Two petitions are on file with the Oklahoma Corporation Commission seeking changes in proration and production. A third is due to be filed. An injunction is before the district court to halt drilling in Lincoln Terrace, exclusive subdivision which has been zoned for drilling. Property owners are seeking the injunction on the plea that plat restrictions are being violated in leasing to drill in the subdivision.

Petitions now before the corporation commission have been set for hearings July 14 and 15. The first day evidence will be heard in behalf of the effort of British American Oil Producing Company to get the allowable of Oklahoma raised to 569,800 barrels daily, the figure issued by the United States Bureau of Mines as reasonable for the Oklahoma market in July. The figure selected by the corporation commission is 526,175 barrels daily.

British American Oil Producing Company is one of the leading producers in the north extension of the Oklahoma City pool. It sets forth that there has been discrimination against production from the Wilcox sand since the potential of the north extension gained sharply in June only to meet a lower allowable in order to reduce total output for the state.

The second petition, which will be heard July 15, was filed by Indian Territory Illuminating Oil Company, Bartlesville, which seeks to lift proration in the Simpson zone of the entire Oklahoma City field. Wells from this formation were allowed to produce at capacity for the first half of this year. The July proration order fixed allowable at 10 percent of potential or a choice of 200 barrels per day as a minimum.

There are now 323 Simpson sand wells in the field. Most of them are on the pump and making water.

The issue as to Lincoln Terrace came to a head when Southwestern Petroleum Company staked a location at Seventeenth street and Laird Avenue. Application for a city permit was denied on the ground that the drilling concern did not have leases on all lots in the block. It showed that an agreement had been reached on 15 of the 24 lots in the block.

This was followed by petition for injunction in district court. The pleading of this is that the Lincoln Terrace subdivision was sold for home purposes only.

Property owners who favor drilling in this subdivision are charging that the suit to restrain development is fostered by the oil concerns which have production and drilling wells around the area.

A third question for the corporation commission is due to be filed after the political campaign the first part of the month. Governor E. W. Marland has indicated that a petition will be filed in an effort to equalize output of wells in the north extension of the pool. Statements by his advisors are to the effect that the early wells got high potentials when they were completed due to higher bottom-hole pressure. Later wells had lower potentials. Evidently the effort will be made to have potentials of all wells taken so the later wells can gain higher daily production.

Wells on the state lands around the capitol are among the recent completions. Unless there is a change wells will produce on existing proration figures until October 1, when all wells go to production in keeping with potentials that will be taken in September.

COMPACT MEETING

July 31 session will be a most important one

OKLAHOMA CITY.

GOVERNOR E. W. MARLAND of Oklahoma, chairman of the Interstate Oil Compact Commission, has characterized the forthcoming meeting of that group as "probably the most important meeting of the commission since it was organized." He made this statement in a letter sent out to the governors of all the oil producing states in the United States. In the letter he invited each governor to attend the meeting in person if possible, or otherwise by proxy.

The meeting will be held in Dallas, Texas, at 10 o'clock on the morning of Friday, July 31, at the Baker Hotel. There has been some confusion in the industry as to the time of the meeting, but the information here given is correct, being from Governor Marland's letter.

The compact, entered into by Colorado, Illinois, Kansas, New Mexico, Oklahoma, and Texas, will expire by its own terms September 1, 1937. If the commission is to continue to function beyond that time, it will be necessary for a new compact to be drawn and ratified by the legislatures of the several states and for that new compact to be ratified by Congress. The question whether oil and gas producing states not now parties to the compact will join the compact will have great influence and bearing upon the action of the present compacting states.

Governor Marland enclosed with his letters to the governors copies of the transcript of proceedings of the latest meeting of the commission, held in Oklahoma City, March 13, 1936. In the transcript is a copy of the compact entered into by the mentioned states.

The commission's sub-committee on petroleum conservation laws will meet at Dallas at the Baker Hotel at 10 a.m. July 29, and will continue work to complete its report on the morning of July 31. It was stated by Governor Marland in his letter to the governors of the other states that "We would appreciate the co-operation and advice of someone with experience in conservation problems of your state to meet with this sub-committee and give their suggestions for its report and further work."

Governor Marland pointed out that those attending these meetings at Dallas will have the opportunity of going to the Texas Centennial Exposition in that city.

STRIKE FAILS

West Texas builders have resumed work

MIDLAND.

RIG builders in West Texas and New Mexico have abandoned efforts to force contractors to raise the daily wage scale from $12 to $14 after being out on strike since June 10, and resumed work July 6 without attaining their objective. The strike was launched at Hobbs, New Mexico, under the direction of non-resident officials of the United Rig Builders' Union, and spread rapidly into the heart of the Permian Basin section of West Texas. New drilling was halted in all areas, except where machines are used without derricks, as operators preferred to postpone new field work pending settlement of the labor dispute.

Approximately 1000 field workmen, particularly members of drilling crews, were thrown out of work when rigs were stacked following each completion. These non-participants in the strike became embittered after weathering the enforced idleness for three weeks, and threatened physical violence upon strike leaders. Merchants and restaurants refused to extend further credit to the idle workmen during the week prior to strikers agreeing to withdraw their demands.

Majority of the operators welcomed the opportunity to suspend the ambitious drilling programs that have been waged for months in keeping abreast of offset locations, and signified intentions of holding up projected development work indefinitely. However, drilling crews were resuming work late last week as fast as derricks could be erected.

APPEAL RODESSA SUIT

AUSTIN.

THE Texas Railroad Commission has requested Attorney General McCraw to appeal from an order of the 126th District Court allowing the movement of 55,000 barrels of Rodessa crude which had been impounded by a previous decree of the Federal Court at Tyler.

Suit was brought in District Court by the East Texas Refining Company, and an order issued by the court prohibited the Railroad Commission from interfering with the movement of this crude because it had failed to act on an application for a tender within the 20-day period allowed by Texas statutes.

Reports Are

By JACK LOGAN, Associate Editor

TABLES that accompany this article embody figures showing the results in the oil industry during the first half of 1936 as well as during June.

The figures are encouraging in both instances. The results were favorable in both the 6 months period and in the closing month of that period.

Half Year Results Good

During the first 6 months of 1936 the demand for petroleum broke all previous records. In the meantime, there was an effective balancing of the supply with the demand, with the result that the markets were comparatively favorable. Oil companies did large volumes of business at satisfactory prices, and consequently showed improved earnings.

With demand for petroleum running at all time record proportions, crude oil production was increased to meet requirements, and drilling activity was expanded proportionately.

The latest official figures of the Bureau of Mines on petroleum demand show that in the first 4 months of 1936 the total demand for United States oils ran 11 percent ahead of the requirements in the similar period of 1935. (These figures embrace both domestic and export requirements.)

The accompanying tables show that United States crude production in the first 6 months of 1936 was 12½ percent greater than in the opening half of 1935. Drilling was increased by a percentage somewhat out of line with the gains in demand and production, however. In the first half of 1936 well completions ran 20 percent ahead of those in the similar period of 1935.

Stocks Held About Same

By virtue of successful balancing of supply with demand, above-ground stocks of oils were about the same at the middle of 1936 as at the beginning of the year. In the first 4 months of the year the stocks were increased about 10,000,000 barrels but in the succeeding 2 months there were virtually compensating withdrawals from storage, particularly from gasoline storage. The total stocks of all oils on hand at the end of June, 1936, were around 25,000,000 barrels lower than the supplies held a year previously. Most of that large reduction represented further withdrawals from crude storage. As of June 20, 1936, the Bureau of Mines reported total crude stocks at 312,344,000 barrels.

Gasoline stocks were built up the past spring to unprecedented proportions. But they have been coming down steadily. In recent weeks the withdrawals have been especially heavy. Consequently, present gasoline inventories are regarded by some qualified commentators as not being excessive, despite the fact they are higher than at this time last year. While the stocks are greater, the gasoline demand also has been running substantially higher.

Prices Higher This Year

Shortly after the opening of this year, prices of both crude and refined oils advanced to higher levels. Although the markets subsequently became unsteady at times, most of the gains were held.

Crude prices were advanced 10 to 15 cents a barrel in January, and therefore averaged about 10 percent higher in the opening half of 1936 than in the similar period of 1935.

Soon after the crude price advance of January, 1936, gasoline tank car prices at the refineries responded with increases averaging around one half-cent a gallon. Some of that gain was sacrificed in April and May, but prices again are on the upgrade, and the quotations are not far under the highs of the year. The refinery prices on gasoline at the end of June were about

United States Drilling and Production, June, 1936, and Cumulative for Year

STATE & DISTRICT	MONTH OF JUNE, 1936						CUMULATIVE, JANUARY THROUGH JUNE, 1936					
	*Completions	Oil Wells	Gas Wells	Failures	Initial Prod-Bbls. Daily	†Total Bbls. Oil Prod.	*Completions	Oil Wells	Gas Wells	Failures	Initial Prod-Bbls. Daily	†Total Bbls. Oil Prod.
Arkansas	7	2	....	5	322	892,200	43	13	1	29	5,398	5,433,300
California	111	76	3	32	42,641	17,347,200	559	365	10	184	190,674	108,062,708
Colorado	2	2	....	....	2,148	142,100	6	3	....	3	2,150	810,750
Eastern States	274	87	128	59	2,333	3,290,650	1,554	460	674	420	12,164	19,171,850
Illinois	....	....	....	....	....	....	4	....	4	....	....	....
Indiana	30	9	11	10	230	.....	121	23	37	61	678	.....
Kentucky	19	17	....	2	986	.....	125	68	6	51	5,547	.....
Ohio	163	49	78	36	1,062	.....	951	281	419	251	5,263	.....
West Virginia	62	12	39	11	55	.....	353	88	208	57	676	.....
Kansas	171	128	4	39	128,548	4,377,650	761	543	25	193	504,622	26,829,900
Louisiana	115	73	16	26	78,162	6,672,750	515	343	62	110	975,253	37,379,000
North Louisiana	61	37	14	10	61,345	2,295,900	291	189	56	46	883,197	12,052,850
South Louisiana	54	36	2	16	16,817	4,376,850	224	154	6	64	92,056	25,326,150
Michigan	100	41	32	27	7,382	1,008,000	374	169	93	112	32,826	6,509,350
Montana	20	18	1	1	1,497	511,250	62	52	4	6	5,238	2,527,900
New Mexico	66	60	1	5	122,242	2,191,000	268	242	10	16	462,682	11,754,000
Oklahoma	345	235	6	104	607,676	16,492,950	1,389	938	70	381	1,628,612	96,020,750
Southeastern States	2	....	....	2	.....	.....	7	....	....	7	.....	.....
Alabama	....	....	....	....	.....	.....	2	....	....	2	.....	.....
Florida	....	....	....	....	.....	.....	1	....	....	1	.....	.....
Mississippi	2	....	....	2	.....	.....	4	....	....	4	.....	.....
Texas	1,257	957	31	269	1,430,436	34,586,200	6,046	4,550	179	1,317	7,027,208	202,777,100
East Texas	307	287	....	20	925,314	13,112,850	1,497	1,413	2	82	4,997,155	79,998,200
East Central Texas	64	47	14	3	24,281	1,852,350	331	236	80	15	135,004	11,093,000
North Texas	212	107	....	105	12,807	1,766,050	1,062	585	6	471	57,881	10,559,000
South Texas	320	251	9	60	136,234	2,560,300	1,572	1,178	47	347	639,852	13,822,650
Texas Gulf Coast	118	85	4	29	35,060	7,533,300	554	396	17	141	170,037	42,489,250
Texas Panhandle	64	47	14	3	24,281	1,852,350	331	236	80	15	135,004	11,093,000
West Texas	152	135	....	17	213,888	5,387,950	656	551	8	97	775,599	31,147,900
West Central Texas	58	26	3	29	1,981	761,050	252	102	14	136	6,653	4,582,250
Wyoming	11	9	1	1	11,379	1,105,300	28	23	3	2	24,261	6,438,300
Total United States	2,481	1,688	223	570	2,434,766	88,617,250	11,612	7,701	1,131	2,780	10,871,088	523,714,908

*June completions here shown represent not the calendar month, but the five weeks, or 35 days, ended June 27.
†Preliminary, subject to slight revision.

Encouraging

FIGURES FAVORABLE FOR JUNE AND FOR FIRST HALF OF YEAR

one half-cent a gallon better than a year previously.

The oil industry as a whole has profited, moreover, by this year's improvement in crude prices and gasoline tank car prices, as retail prices have been advanced proportionately. When the refinery prices were raised a half-cent early this year, service station prices also moved up an average of about one half-cent a gallon. Those gains also have been held. Consequently, service station prices now are about one half-cent a gallon higher for the country as a whole, as compared with postings at the first of the year. About the same improvement is noted, also, in a comparison with one year ago.

Earnings Best in Six Years

Doing large volumes of business at comparatively high prices, most of the oil companies will show favorable earnings records for the first half of 1936. In a large proportion of cases, profits were higher than in the opening half of 1935. In general, the earnings in the first 6 months were the best for the past 6 years. To find better showings, the records must be traced back to 1930 or 1929. For some companies, the earnings this year have been the best on record.

Drilling Up Sharply

Although much potential crude production is being held back, under proration, the industry has elected not to draw more heavily on existing wells, but to drill more wells, in meeting increased demand. In fact, drilling has been stepped up out of proportion to the gain in demand. While demand has been running this year about 11 percent ahead of last year, drilling has been carried on at a rate 20 percent higher. In the first 6 months of 1936, well completions in the United States totaled 11,612, compared with 9680 in the first half of 1935. This amount of drilling in the first half of this year represented almost as much field work as occurred in various full years of the depression period. In all of 1931 there were but 11,716 wells completed, and in 1933 drilling reached the depression bottom, 11,700 wells having been completed during the whole year.

If the 20 percent increase over last year's drilling should be continued through the latter half of this year, 1936 would furnish a total of approximately 25,000 new wells. That would be the greatest amount of drilling since 1926, when about 29,000 wells were completed. Even with some let-down in drilling in the latter half of the year, the 1936 drilling may be the greatest since 1926, as the largest yearly total of completions since that year was that of about 23,500 wells completed in 1929.

It seems likely that this year's expansion of drilling has resulted partially from the advance of crude prices at the beginning of the year. Tending to confirm this statement is the fact drilling gains have been general throughout the country, while the price increases also were general. However, the generally bright outlook for the industry also has no doubt encouraged increased drilling.

The greatest gains in drilli- com-

Finished Gasoline Stocks

(American Petroleum Institute figures, as shown in weekly reports.)

DATE	Total Barrels Reported
March 24, 1934	57,011,000
March 31	†57,098,000
April 28	56,011,000
May 26	54,493,000
June 30	51,405,000
July 28	48,597,000
August 25	46,120,000
September 29	43,850,000
October 27	41,993,000
November 17	*39,892,000
December 1	40,831,000
December 29	43,969,000
January 26, 1935	47,888,000
February 23	54,399,000
March 2	55,654,000
March 16	†57,406,000
March 30	56,388,000
April 27	55,097,000
June 1	53,180,000
June 29	50,007,000
July 27	48,157,000
August 31	43,787,000
September 28	42,976,000
October 26	41,163,000
November 9	*40,780,000
November 30	43,190,000
December 28	46,472,000
January 25, 1936	50,368,000
February 1	52,831,000
February 29	60,881,000
March 21	†62,855,000
March 28	62,559,000
April 25	61,638,000
May 2	62,170,000
May 30	59,589,000
June 27	57,263,000
July 4	55,907,000

*Low point of year.
†High point of year

United States Production

(Based on American Petroleum Institute estimates, which do not include oil that may have been surreptitiously produced.)

MONTH	Daily Average (Barrels)	Federal Estimate of Demand
January, 1934	2,233,505	2,183,000
February	2,239,070	2,183,000
March	2,339,950	2,282,800
April	2,420,950	2,366,200
May	2,575,380	2,366,200
June	2,588,100	2,528,300
July	2,560,550	2,530,300
August	2,475,300	2,449,300
September	2,431,950	2,341,700
October	2,364,150	2,325,800
November	2,375,400	2,340,300
December	2,414,600	[1] 2,307,000 [2] 2,460,300
January, 1935	2,500,850	2,460,300
February	2,521,250	2,526,100
March	2,568,800	2,520,300
April	2,559,750	2,527,300
May	2,601,350	2,561,200
June	2,695,100	2,651,000
July	2,707,150	2,660,000
August	2,676,250	2,600,600
September	2,737,750	2,613,000
October	2,780,850	2,554,200
November	2,825,900	2,563,700
December	2,826,850	2,540,200
January, 1936	2,818,300	2,559,200
February	2,774,450	2,648,100
March	2,828,750	2,738,900
April	2,914,600	2,797,300
May	2,976,053	2,826,300
June	2,953,908	2,838,300

[1] December 1-16.
[2] December 17-31.

Crude Oil Stocks

Bureau of Mines figures as compiled monthly, comprising all crude in storage in the United States.

At End of:	Total Barrels In Storage
January, 1934	353,642,000
February	351,641,000
March	354,067,000
April	354,350,000
May	355,883,000
June	357,239,000
July	355,260,000
August	350,838,000
September	348,937,000
October	346,415,000
November	341,165,000
December	337,254,000
January, 1935	338,174,000
February	337,319,000
March	339,139,000
April	339,793,000
May	338,559,000
June	334,757,000
July	329,351,000
August	324,966,000
September	320,705,000
October	317,155,000
November	315,558,000
December	314,631,000
January, 1936	313,081,000
February	310,812,000
March	313,189,000
April	315,389,000

Trend of stocks situation since end of April, figures being from weekly reports of Bureau of Mines.

April 25	313,132,000
May 2	314,192,000
May 30	314,020,000
June 6	314,353,000
June 13	312,543,000
June 20	312,344,000
June 27	310,749,000

Excesses of Average Daily Crude Production Above Bureau of Mines Recommendations

(Barrels Daily)

STATE	JUNE, 1936			MAY, 1936			APRIL, 1936		
	Production	Demand	Excess	Production	Demand	Excess	Production	Demand	Excess
California	578,240	535,500	42,740	576,643	544,000	32,643	572,671	552,600	20,071
Kansas	145,922	153,100	*7,178	156,679	150,100	6,579	153,600	146,000	7,600
Louisiana	222,427	175,700	46,727	228,040	170,500	57,540	210,642	160,900	49,742
New Mexico	73,033	68,300	4,733	74,600	65,900	8,700	63,692	63,200	492
Oklahoma	549,765	552,500	*2,735	546,182	538,300	7,882	550,170	525,000	25,170
Texas	1,152,873	1,125,700	27,173	1,163,460	1,132,500	30,960	1,145,953	1,122,800	23,153
Other States	231,648	227,500	4,148	230,449	225,000	5,449	217,872	226,800	*8,928
United States	2,953,908	2,838,300	115,608	2,976,053	2,826,300	149,753	2,914,600	2,797,300	117,300

*Under production.

pared with last year, have included those around 100 percent or more in New Mexico, North Louisiana, West Texas, South Texas, East Central Texas, and Michigan. Around 25 percent more drilling this year than last year has occurred in Oklahoma, Kansas, Montana, Colorado, the Eastern States, and the Texas Panhandle. Smaller increases were recorded for California, South Louisiana, North Texas, the Texas Gulf Coast, West Central Texas, and Wyoming. This year has brought less drilling than last year for Arkansas, the Southeastern States, and East Texas. In the latter area, formerly the scene of an exceptionally large proportion of the country's field work, there were but 1497 well completions in the first 6 months of this year, compared with 2261 in the similar period last year, a decrease of 34 percent.

Production Gains General

As in the cast of drilling gains in crude production have been the rule among the various producing states. The only states that produced less crude in the first half of this year than in that period last year were Arkansas, down 3 percent, and Michigan, off 4½ percent. Although Texas as a whole showed an increase, 2 of its 8 principal divisions, East Texas and West Central Texas, registered almost negligible declines.

The outstanding increase in production was that of 67 percent for Louisiana, which yielded 37,379,000 barrels the first half of this year, compared with only 22,327,300 barrels the similar period last year. Under the influence of Rodessa's flush output, North Louisiana rose to 12,052,850 barrels from 4,172,100 barrels, a gain of 189 percent. South Louisiana also showed a large gain, as production rose to 25,326,150 barrels from 18,155,200, or 39 percent. Other important increases were those of 32 percent for New Mexico, 31 percent for the Texas Gulf Coast, 29 percent for Montana, 28 percent for South Texas, 21 percent for East Central Texas, 19 percent for California, 13 percent for West Texas. All these increases were greater than the national gain of 12½ percent. Lesser increases included those of 9 percent for Texas as a whole, 6 percent for Oklahoma, 4 percent each for Colorado and Wyoming, 2 percent for Kansas, 1 percent each for North Texas and the Texas Panhandle, and less than 1 percent for the Eastern States.

Success in June

The oil industry's statistics for June were unusually favorable. Wells and refineries were so strictly regulated as to permit encouraging withdrawals from stocks of both crude oil and gasoline. There was remarkable co-operation in the industry and among the state conservation officials in regulating crude output and refinery operations. With the current output held under demand, the withdrawals from storage were possible, and this situation definitely strengthened the markets in the latter part of the month. Tank car prices were trending upward as the month ended, and retail prices also were tending to rise. The crude market also was stronger. (Incidentally, this bright picture has continued into July, and this month promises to bring a repetition of the encouraging record of June, as even stricter control of crude output is prescribed under July allowables of the leading producing states.)

Stocks Come Down

Figures on crude stocks and gasoline stocks in June offer evidence of the success that attended regulatory efforts. In accordance with the usual seasonal trend, gasoline inventories were drawn upon substantially. The gasoline stocks came down about 3,000,000 barrels during the month. That was about the same amount of decrease as in June of each of the two preceding years. On June 27, 1936, total stocks of finished gasoline, as reported to the American Petroleum Institute, aggregated 57,263,000 barrels, compared with

Wells Completed in the United States

(Including Oil Wells, Gas Wells, and Dry Holes)

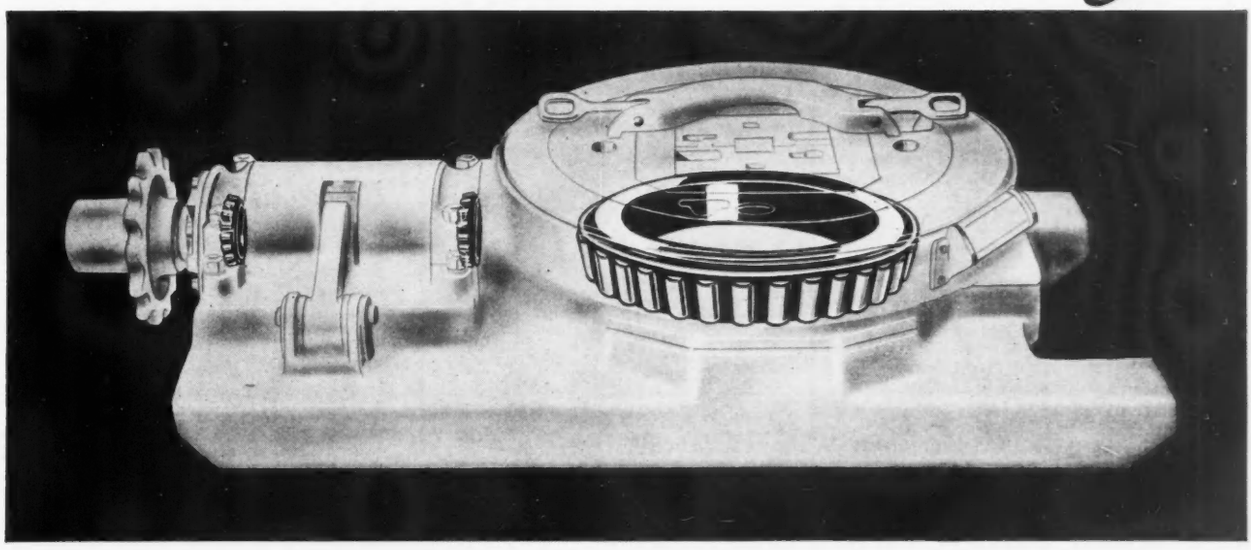
MONTH	Daily Average
January, 1933	30.0
February	30.6
March	26.6
April	25.5
May	25.6
June	21.1
July	23.1
August	30.7
September	36.5
October	40.9
November	46.9
December	47.7
January, 1934	39.7
February	38.1
March	40.6
April	44.0
May	50.7
June	51.5
July	53.6
August	51.3
September	43.2
October	49.6
November	49.9
December	48.3
January, 1935	47.9
February	49.6
March	48.8
April	58.5
May	63.6
June	58.6
July	60.9
August	62.8
September	57.9
October	57.1
November	55.2
December	54.2
January, 1936	52.4
February	51.6
March	60.6
April	69.2
May	*71.9
June	70.9

*** Highest since July, 1930, when completions averaged 76.6 daily. Average dropped in August, 1930, to 52.4 and remained below that figure until July, 1934.**

United States Drilling and Production in First Six Months of 1936 and 1935

STATE OR DISTRICT	WELLS COMPLETED			BBLS. OF CRUDE PRODUCTION		
	In 1936 (6 Mos.)	In 1935 (6 Mos.)	Percent Change	In 1936 (6 Mos.)	In 1935 (6 Mos.)	Percent Change
Arkansas	43	84	— 49	5,433,300	5,609,400	— 3
California	559	512	+ 9	108,062,708	91,126,806	+ 19
Colorado	6	5	+ 20	810,750	782,350	+ 4
Eastern States	1,554	1,136	+ 27	19,171,850	19,083,000	+ ½
Kansas	761	604	+ 26	26,829,900	26,381,550	+ 2
Louisiana	515	352	+ 46	37,379,000	22,327,300	+ 67
North Louisiana	291	137	+112	12,052,850	4,172,100	+189
South Louisiana	224	215	+ 4	25,326,150	18,155,200	+ 39
Michigan	374	196	+ 91	6,509,350	6,806,550	— 4½
Montana	62	49	+ 26	2,527,900	1,962,700	+ 29
New Mexico	268	136	+ 97	11,754,000	8,895,550	+ 32
Oklahoma	1,389	1,057	+ 31	96,020,750	90,185,150	+ 6
Southeastern States	7	10	— 30	.....	.....	.....
Texas	6,046	5,513	+ 10	202,777,100	186,200,950	+ 9
East Texas	1,497	2,261	— 34	79,998,200	80,224,850	— ⅓
East Central Texas	331	107	+209	11,093,000	9,140,050	+ 21
North Texas	1,062	1,003	+ 6	10,559,000	10,480,650	+ 1
South Texas	1,572	833	+ 89	13,822,650	10,829,650	+ 28
Texas Gulf Coast	554	501	+ 11	42,489,250	32,330,750	+ 31
Texas Panhandle	331	270	+ 22	11,093,000	10,978,200	+ 1
West Texas	656	328	+100	31,147,900	27,618,200	+ 13
West Central Texas	252	216	+ 17	4,582,250	4,598,600	— ⅓
Wyoming	28	26	+ 8	6,438,300	6,208,650	+ 4
Total United States	11,612	9,680	+ 20	523,714,908	465,569,956	+ 12½

AN X-RAY VIEW OF A *Modern Rotary*



The application of Timken Bearings at the three points shown in this X-ray view is a modern refinement that yields happy results in power saving; wear reduction; radial-thrust resistance; increased dependability; longer equipment life; and lower maintenance costs.

Timken Bearings are ideally suited to the bearing requirements of all kinds of heavy duty oil field equipment because they combine unexcelled anti-friction efficiency with super load capacity plus the ability to hold moving parts in correct and constant alignment.

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A symbol of quality for any piece of equipment with which it is associated

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN TAPERED ROLLER BEARINGS

59,589,000 barrels May 30. By July 4 the stocks had come down another million barrels, to 55,907,000 barrels.

The reported total of 57,263,000 barrels of finished gasoline on hand June 27, 1936, was 14.5 percent higher than the supplies held on June 29, 1935. This increase in stocks is partially but perhaps not entirely justified by the gain that has occurred in gasoline consumption. In the first four months of this year (latest official figures available), gasoline demand ran 9.6 percent higher than in the similar period last year. That percentage possibly has been increased some for the full half year of 1936, compared with the first half of 1935. Consequently, it appears that present gasoline stocks are not far out of line with the current high consumption. In fact, some refiners have predicted that there will be scarcity of gasoline in certain districts this summer, if recent heavy consumption continues.

Crude Storage Decreases

Since June brought only the normal seasonal withdrawals from gasoline stocks, refinery operations were comparatively heavy, in meeting the large consumption. Crude runs therefore were relatively heavy, and since crude output at the wells was so rigidly controlled, part of the plant requirements came from crude storage. During the month the withdrawals from storage aggregated more than 3,000,000 barrels. In May the crude stocks had not changed materially, while in both April and March they had increased substantially. Through the large reduction of June, the total crude stocks came down to the lowest level of the year. The total of 310,749,000 barrels on hand June 27 was a little under the year's previous low mark of 310,812,000 barrels held at the end of February.

Crude Control Stricter

Largely responsible for the favorable situation regarding crude and gasoline stocks in June was the strict control of crude production. The country as a whole adhered more closely to Bureau of Mines recommendations in June than in either May or April. The June recommendations had contemplated that above ground storage would be reduced substantially, and that was what occurred. With the leading states of the Mid-Continent putting forth special co-operative efforts, the nation's crude production for June was held within 115,608 barrels of the recommended daily output. That excess compared with 149,753 barrels daily in May and with 117,300 barrels daily in April, and it represented better than usual adherence to the Bureau of Mines suggestions.

Of the 115,608 barrels daily excess in June, 77 percent was accounted for by Louisiana and California, the two states that consistently have failed to do their parts in holding the nation's output down properly. The remaining 23 percent was accounted for almost wholly by Texas. Oklahoma and Kansas were slightly under their federal quotas, while New Mexico and other states were but slightly above the allocations. An accompanying table shows how production of the various states has compared with the Bureau of Mines recommendations during the past three months. (Incidentally, allowables that have been prescribed by the states for July indicate that this month will bring closer adherence to the allocations than occurred in June.)

RODESSA YEAR OLD

SHREVEPORT.—The Rodessa oil field was one year old July 12, the first oil well in that area having been completed by United Gas Public Service Company in I. L. Young 1, SE SE 21-23n-16w, Caddo Parish, almost five years after R. W. Norton completed the first Glen Rose gas well in Section 33-23n-16w. This gas well was just below 5500 feet and was on the Hill lease, the four sands at Rodessa having taken their names from the names of the leases on which new strata were discovered. The sands reading from the highest to lowest, all in the Glen Rose, below the anhydrite are: Hill, Gloyd, Dees and Young. The Young, with a few exceptions of wells down the flanks, has been the only one so far productive of oil.

Up to July 1, 1936, Rodessa has produced 10,118,000 barrels of oil of which 9,736,000 barrels was produced from the Caddo Parish side of the field, and 382,000 barrels from the Cass County, Texas side.

This has been the first Glen Rose oil production below the anhydrite of any consequence in North Louisiana or Arkansas.

LINE COMPLETED

San Antonio.—Louis Crouch and associates have completed construction of a two-inch screw pipe line from Zoboroski field in Guadalupe County to the Knodel lease in Darst Creek field, same county, where it ties into Magnolia Pipe Line Company's system. The 7½-mile project gives the first pipe line outlet to this field. Magnolia is to take up to 400 barrels per day from this line.

EIGHT-INCH LINE

Tulsa.—Stanolind Crude Oil Purchasing Company is laying a new eight-inch line connecting a main lateral with new production in the Nowata and Chelsea areas where increased activity and water flooding is materially raising production of Rogers and Nowata Counties. Operators have been busy in this shallow pay sector redrilling the Bartlesville sand at depths ranging from 400 to 600 feet. Combined interests have been using water drive to increase recovery of drilled tracts in the two counties.

Sooner Oil Company and Frank Bickenhouser's Jesse Baker 1, SW NE SE 31-20-16e, west of Inola, Rogers County, which opened a new pool last spring, is credited with starting new drilling activities. Oil Field Drilling Company and B. Mullins' Roe 2-A, NE SE SE 31-20-16e, an offset, hit the pay at 648 feet and made 27 barrels per day. Pure Oil Company is checking the results of water flooding. A number of new locations, in both the proven and wildcat areas, has been announced and lease speculation is increasing.

DETROIT HAS GAS

Detroit, Michigan.—Panhandle Eastern Pipe Line Company has completed construction of a 300-mile 22-inch line from Zionsville, Indiana, to Detroit, and began making deliveries of natural gas from Texas and Kansas fields early in July. This enlarged market outlet has boosted the company's natural gas runs to about 125,000,000 cubic feet daily, with approximately two-thirds of the supply coming from the Texas Panhandle, and the remainder from the Hugoton gas field in southwestern Kansas.

ENLARGE GAS PLANT

Amarillo.—Texhoma Natural Gas Company and Natural Gas Pipe Line Company of America, owners of a 24-inch natural gas transmission line that serves Chicago and intermediate points with fuel produced in the Texas Panhandle, will add an extra compressor unit to each of the four main line stations. This added booster capacity is expected to step up deliveries about 10 percent.

MAY REPORT

Texas production is 1,159,591 barrels daily

Austin.—The indicated production for Texas during the month of May was 35,947,317 barrels, according to a report released last week by the Oil Accounting Bureau of the Texas Railroad Commission. This was a daily average of 1,159,591 barrels.

A comparison shows that this was approximately the same average that was maintained throughout the month of April. Reductions ordered for June may show a lower average daily production, the May report indicates.

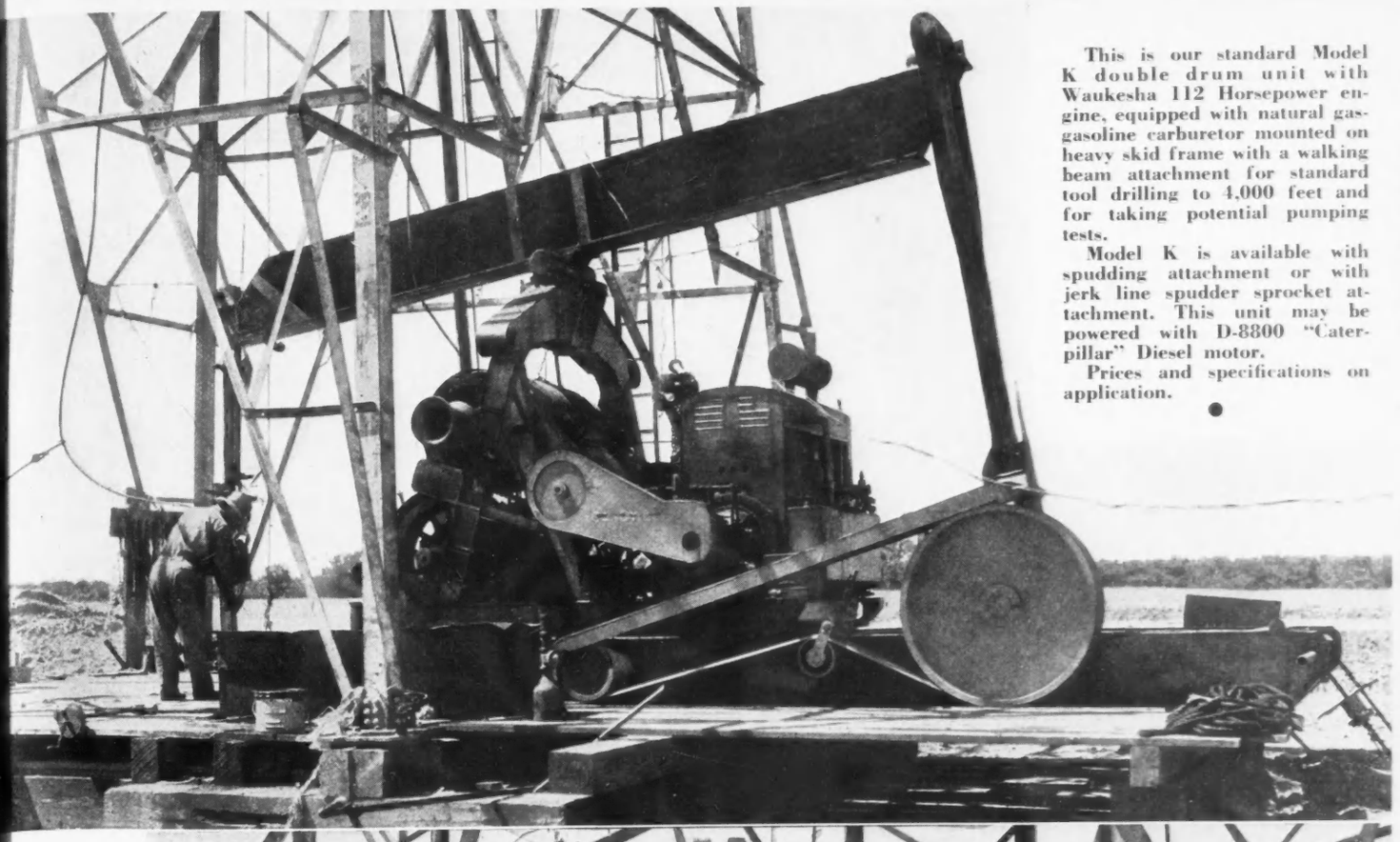
May production was 2.34 percent, or 862,737 barrels, below the allowable fixed by Railroad Commission proration orders. This is the largest underproduction reported in any month since this record has been maintained.

The report shows that there were 12,696 producing leases on which were drilled 62,593 producing wells, 742 more wells than were reported in April. There were 24,877 flowing wells and 37,716 pumping wells.

Storage remained relatively static during the month of May. There were 3,979,184 barrels in storage at the end of May, an increase of 48,454 barrels during the 31-day period.

Operators reported that 35,503,611 barrels of oil was run to pipe lines, 65,369 barrels was moved by tank cars, 109,152 barrels was shipped by truck, 22,833 barrels was used for fuel, 225,285 barrels was used for miscellaneous purposes.

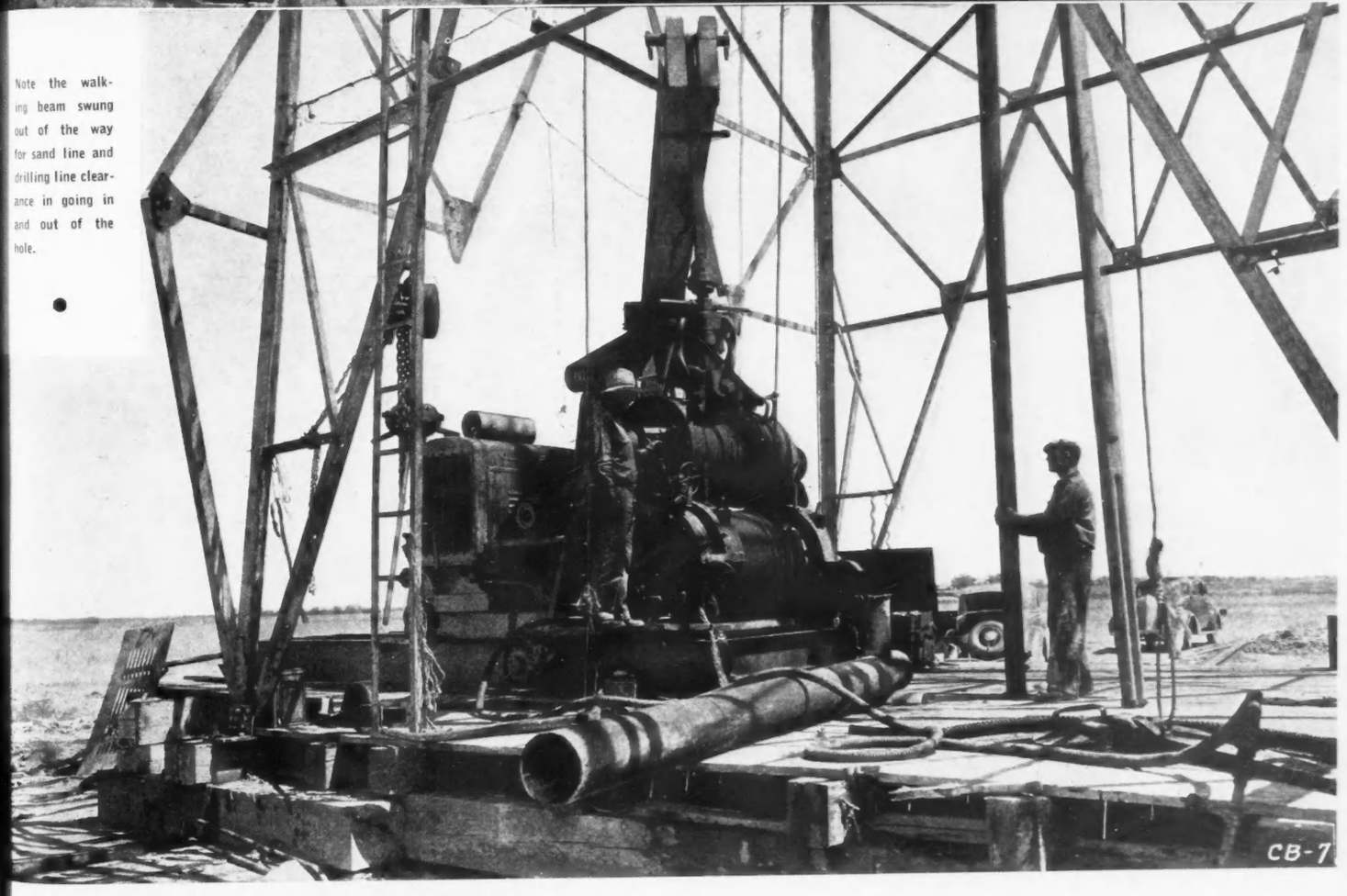
PORTABLE TO THE LAST INCH



This is our standard Model K double drum unit with Waukesha 112 Horsepower engine, equipped with natural gas-gasoline carburetor mounted on heavy skid frame with a walking beam attachment for standard tool drilling to 4,000 feet and for taking potential pumping tests.

Model K is available with spudding attachment or with jerk line spudder sprocket attachment. This unit may be powered with D-8800 "Caterpillar" Diesel motor.

Prices and specifications on application.



Note the walking beam swung out of the way for sand line and drilling line clearance in going in and out of the hole.

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MEN IN THE INDUSTRY'S NEWS

COLONEL W. C. O'FERRALL JOINS LION OIL REFINING COMPANY AS SUPERINTENDENT OF PRODUCTION

HAS BEEN SUPERINTENDENT OF ARKANSAS PRODUCTION FOR STANDARD OF LOUISIANA

FAY C. WALTERS, superintendent of measurement for Panhandle Eastern Pipe Line Company, Kansas City, vacationed at the home of his parents in Tulsa for a few days.

LEO HANSA, geologist and oil operator of Wichita, recently returned from a seven months European trip, including Czechoslovakia, his homeland. While in that country he leased some 200,000 acres of land for future development.

R. T. ZOOK and William J. Sloan, officials of Sloan & Zook Companies, producing concern of Bradford, Pennsylvania, have been touring the Mid-Continent district for the purpose of entering this territory with a development campaign. They are at this time studying properties along the Texas Gulf Coast and in Southwest Texas. They have been making most of their tour by plane.

C. F. KNOLLENBERG, superintendent of production for Twin State Oil Company, returned to the Tulsa offices after a vacation in Colorado.

D. R. SNOW, after an extensive inspection of Barnsdall Oil Company properties in Oklahoma, Texas and Louisiana, returned to the Tulsa offices. Snow is vice president in charge of production, land and geology.

E. T. ADAMS, purchasing agent of Mexican Sinclair Petroleum Corporation, has returned to headquarters at Tampico, Mexico, after a vacation in Colorado.

J. A. MOFFETT has resigned as vice president of Standard Oil Company of California, to become chairman of the board of the recently formed California Texas Oil Company Limited.

JAMES DANIELS has resigned as Kansas geologist of Continental Oil Company to take over the duties of chief geologist of Slick, Pryor and Lockhart, Incorporated, at Wichita. His place with Continental Oil Company is to be taken by William Arnet.

DARWIN BENEDUM, geologist of San Antonio, and J. C. Benedum of Corpus Christi, Texas, left July 5 for Pittsburgh, Pennsylvania, where they will be the guests of their uncle, M. L. Benedum.

DALE SCRUGGS, who has been associated with Continental Oil Company's geological department, has accepted a position with Trinity Oil Company at Wichita.

E. D. LUMAN has ben appointed chief geologist for Atlantic Oil Producing Company, Dallas, succeeding the late R. B. Whitehead.

COLONEL W. C. O'FERRALL

COLONEL W. C. O'FERRALL, for 16 years in charge of production in Arkansas for The Standard Oil Company of Louisiana, will join Lion Oil Refining Company effective August 1, according to M. E. Wilson, vice president in charge of production for Lion Oil Refining Company. Colonel O'Ferrall will be placed in charge of the company's production operations in Arkansas, Louisiana, Texas and Kansas. His headquarters will be in El Dorado, Arkansas.

With the discovery of oil in Arkansas in 1921, Colonel O'Ferrall was assigned to duty as division superintendent in charge of production for the Arkansas district for The Standard Oil Company of Louisiana. He developed that company's holdings in the El Dorado, Smackover and Stephens fields. When The Standard Oil Company of Louisiana acquired the production property of Humble Oil & Refining Company in the Irma field, near Waterloo, Arkansas, he took charge of production at that point and developed the company's properties there.

Graduating from the School of Business Administration and Commercial Law at Soule College, New Orleans, O'Ferrall became associated with his father in the general mercantile and real estate business at Laurel, Mississippi. He enlisted for active service upon declaration of the World War and was assigned to the 155th Infantry as a major. Later he was promoted to lieutenant colonel and sent to the School of Fire at Fort Sill, Oklahoma, after which he was assigned to the 39th Division as a colonel. During the war, he served as commander of the 140th Field Artillery Regiment overseas. Following the Armistice, he joined The Standard Oil Company of Loiusiana as assistant drilling foreman, from which position he advanced rapidly.

Colonel O'Ferrall is a director of the Mid-Continent Oil and Gas Association for the Louisiana-Arkansas division, which post he has held since 1923. He is vice chairman of the Arkansas Petroleum Industries Committee, vice chairman for Arkansas of the American Petroleum Institute, Division of Production, and National Counselor of the United States Chamber of Commerce.

W. H. STUEVE RECEIVES DEGREE OF MECHANICAL ENGINEERING

W. H. STUEVE, who is in charge of oil industry power sales for Oklahoma Gas and Electric Company, Oklahoma City, has received a professional degree of mechanical engineer from his Alma Mater, Ohio State University of Columbus, Ohio. The degree was bestowed at commencement exercises on June 15. It was conferred in recognition of Stueve's work for the past 10 years in devising and improving the use of electric power in the petroleum industry. Stueve is active in many of the industry's engineering associations and societies.

W. H. STUEVE

SUCKER RODS

for . . .

corrosive service

● Corrosive conditions in oil fields are not new but the damaging effect of such corrosion on steel subjected to repeated stressing was not properly recognized until recently.

Laboratory fatigue tests in the presence of corrosive waters and sulphides, and field tests in areas subjected to such influences have advanced to the stage that permits evaluating the performance of different grades of rods. National is prepared to furnish several grades to meet different operating conditions.

To make proper selection, however, a knowledge of the well condition is necessary and it is essential that the operator co-operates in determining this.

To properly manufacture these various rods National established a new factory at Carnegie, Pennsylvania. This plant is equipped with specially designed machinery and furnaces for the single purpose of making sucker rods—the best rods that it is possible to manufacture.

THE NATIONAL SUPPLY COMPANY

NSCO

National

Consider the Manufacturer

ELSEWHERE in this issue of THE OIL WEEKLY will be found an article, based upon an actual survey of manufacturing capacities of companies making pumping equipment. The article sets out some interesting facts with regard to the ability of the manufacturers to take care of the demand for pumping equipment in the event that a sudden surge of buying comes as it did about three years ago.

First it should be said that any industry which is set up to take care of a demand several times the normal size for its products is, generally speaking, an industry in poor financial position. We are not speaking of periods of abnormally low buying—the pumping equipment industry went through such a period during the first several years of the depression, with resultant heavy losses. Yet despite these losses many of the manufacturing companies spent this slack time in materially improving their equipment against the day when demand would return.

In 1933, due to pressure drops in East Texas, a sudden flurry of buying took place. Oil companies which had bought little pumping equipment began buying heavily. Each suddenly felt that it might not get what it needed; some feared big price increases, and there was a considerable amount of over-buying. The result was a congestion in the manufacturing plants which meant delayed deliveries. Of course the fact that manufacturing plant personnel was at a low ebb accounted for some of this, but neglect on the part of oil companies to work with their suppliers to the fullest possible extent, and plain heavy buying, were the principal causes.

Our survey of the pumping equipment industry, just completed by letters to every manufacturer of pumping equipment we have on our records, shows that these manufacturers are admirably fixed to take care of normal, and even abnormal demand, but that the general idea that these manufacturers can suddenly quadruple their capacities is erroneous.

We remember back in 1933 that one oil company purchasing agent told us that he could not see why the manufacturers were not ready for the big buying which came. He could not see why manufacturers had not built up large stocks against the certain knowledge that East Texas would eventually go on the pump.

He failed to remember that his own company had not known 30 days prior to the placing of the orders that such heavy ordering would follow. He failed to remember that manufacturers had not been able to determine from his own company even the type of pumping equipment they would need. And he failed to remember that those manufacturers had taken enough loss keeping their plants open without building up stocks of fast changing equipment which might easily have doubled or trebled the losses they had already sustained.

A survey made by THE OIL WEEKLY in 1932 showed that there were less than 650 pumping units in stock in the United States. We were not surprised when delivery slowed down, because manufacturers had previously told us that their own deliveries might easily depend upon delivery to them of important parts necessary to the finished product.

Our article in this issue on the ability of the equipment industry to take care of normal and even abnormal demands, is presented, consequently and quite frankly with the idea of showing the oil industry just how its suppliers are set up to serve it, and from our investigation one fact stands out:

The equipment companies can take care of any reasonable demand, and then can take care of an unreasonable demand *provided the oil companies work closely with them in advance of ordering.*

As to what demand will be, of course, that cannot be foretold. But some of the factors which were working three years ago are at work now. Whether or not the marginal well law applies to flowing wells in East Texas is the big question. Some say that the Railroad Commission will consider the marginal well figure as bottom; some say they won't. What happens there will have a big effect on buying. Throughout the entire United States some 29,000 wells are now flowing, most of which will ultimately go on the pump. How soon nobody knows. But if you add this figure of 29,000 to the wells which will be drilled and equipped for pumping in the future, some of these days the pumping equipment industry will be called upon to strain itself to take care of demand.

PUMPING REQUIREMENTS

BASING the figures on last year's purchases and what is now happening in the way of drilling and falling pressures, THE OIL WEEKLY estimates that a total of 8750 wells will be equipped for artificial lifting during the next twelve months.

The estimates by states follow:

State	Number of Wells
Texas	5500 and up
Oklahoma	1000 " "
Kansas	1000 " "
Louisiana and Arkansas	225 " "
California	500 " "
Mountain States	250 " "
Michigan	275 " "
Total	8750

DO NOT HAVE TO BE BACK-TWISTED
GREEN SIGNIFIES SAFETY
ARE EASIER TO THREAD THROUGH THE TRAVELING BLOCK, CROWN BLOCK AND EYE IN DRUM
SPOOL TIGHTLY EVEN UNDER THE LIGHT WEIGHT OF IDLE BLOCK
WHIP LESS AT HIGH SPEED
RESIST KINKING AND REQUIRE NO SEIZING
LAST LONGER, THUS CUTTING DOWN REPLACEMENT, LABOR AND SHUT-DOWN COSTS

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ALL AMERICAN CABLE COMPANY ROPES MADE OF IMPROVED PLOW STEEL ARE IDENTIFIED BY THE EMERALD STRAND

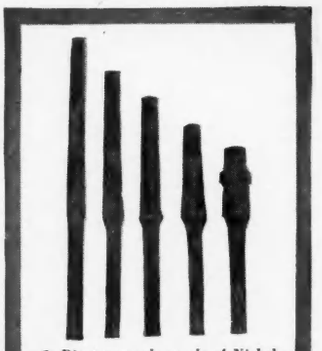
Puts the Brakes on

SUCKER ROD BREAKAGE

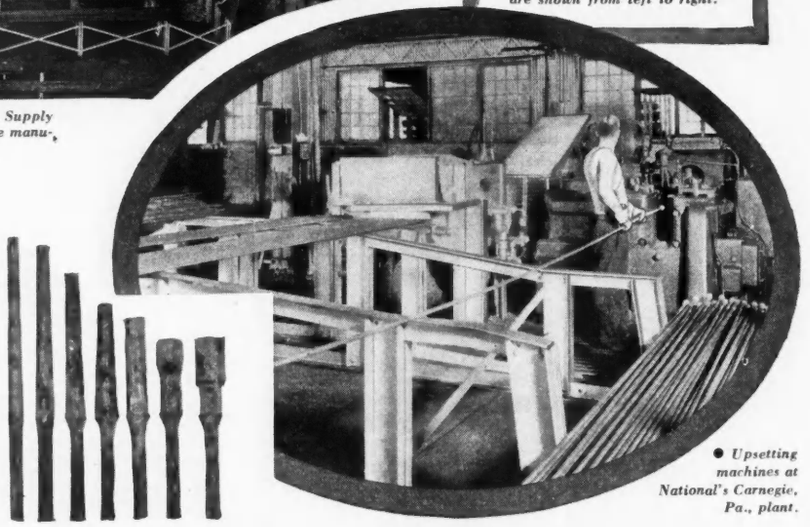
with

NICKEL ALLOY STEELS

● *General view of the modern plant of National Supply Co., at Carnegie, Pa., established especially for the manufacture of sucker rods.*



● *Pin type sucker rods of Nickel Steel. Made by National Supply Co., Toledo, Ohio. In the photograph below are shown the box type rods. Stages in the upsetting are shown from left to right.*



● *Upsetting machines at National's Carnegie, Pa., plant.*

YOU'VE spent entirely too much good money replacing sucker rods. But as wells grow deeper, it becomes increasingly difficult to make sucker rods that stand the varied attacks they have to meet.

Once, way back, sucker rods were made of wood! Today, even high-carbon steels are not good enough to handle their job against increased stress, corrosion, and embrittlement from hydrogen sulphides.

Metallurgists of the National Supply Co., Toledo, Ohio, have spent considerable time, and made many tests, to find metals which combine the properties needed.

They have found that low-carbon Nickel Steels reduce failure to a minimum. They recommend their Grade 80 sucker rods for use under general corrosive conditions and Grade 90 for use where the rod must resist both corrosion and embrittlement from sulphides. Couplings for double pin sucker rods are also made of Nickel Steel.

SUCKER RODS FOR CORROSIVE AND SULPHIDE CONDITIONS

PHYSICAL PROPERTIES

Grade	Yield Point (P.S.I.)	Ultimate Strength (P.S.I.)	Elongation (% in 2")	Red. of Area (%)	Izod Impact (Ft.Lbs.)	Endurance Limits		
						Air (P.S.I.)	Corrosion (P.S.I.)	Sulphide (P.S.I.)
80	53–63,000	80–90,000	30	65	98	48,600	33,000	19,900
90	50,000	65,000	35	70	103	47,900	37,400	23,400

CHEMICAL COMPOSITION

Grade	Carbon	Manganese	Nickel	Molybdenum
80	0.12—0.18	0.30—0.60	1.50—2.00	0.20—0.30
90	0.07—0.12	0.30—0.50	3.25—3.75	.....

Consult Inco's engineers for advice on any of your oil field equipment where the increased toughness and corrosion-resistance Nickel gives to steel would work to your advantage.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N.Y.

Lowering Lifting Costs Through Well Studies

INCREASED RECOVERY AT LOWER COST AND IMPROVED EQUIPMENT ARE LIKELY RESULTS

By FRANK B. TAYLOR, Staff Writer

"A MILLION dollars' worth of oil and only a few cents profit," is the way one oil company executive expressed the story of a troublesome pumping well. "Down for repairs" was written all through the record of this property and, though it was a bad case and this man's remark an exaggeration, it well illustrates the concern of many producers.

During the past year some unusual progress in lowering lifting costs through individual well studies has been made by a number of companies. Some of this work has been the result of cooperation between the producing company and the equipment manufacturer, but in recent months a number of companies have enlarged these efforts and are now carrying this work as a part of their regular production engineering operation.

The general procedure being worked out is about the same, and consists first in making individual well studies of troublesome or high cost pumping wells to effect correction of bad pumping conditions and, second, well studies of ordinary pumping properties to insure the most economic operation and recovery possible.

There is, of course, nothing particularly new about studying pumping wells. This has been practiced since Titusville and a great deal of good has been accomplished by it on virtually hundreds of properties. But as wells have gone deeper and production problems become more and more complex, well studies have become increasingly difficult. Eliminating a costly pound in 6000-foot holes, or getting the most efficient operation in potentials at 44 strokes a minute are confusing problems that take the best of knowledge and equipment to answer.

Experience shows that reducing lifting costs by individual well studies is best accomplished by a combination of technical approach and field experience. The engineer is needed because the functions of modern pumping are questions of mass, motion, materials and design. Technical approach is, therefore, the

A field crew making a dynamometer card of a well

shortest route and when combined with the experience of the field brings results that have gone a long way in getting the best from such programs.

The possibilities of this type of work are illustrated by the experience of one producer with a troublesome well at Oklahoma City. This well was capable of producing slightly better than 400 barrels of oil a day but sucker rods started to part after 38 days, and 25 breaks occurred in the first 180 days of operation. By this time conditions were so bad that 6 rod breaks were experienced between the 180th and 190th day. These 6 rod jobs cost an average of $65.00 each and took an average of 12 hours each to complete. The costs in loss of production alone amounted to over $1200 which, plus the costs of the rod jobs, meant a total cost of over $1600 in 10 days' time. A well study was finally made, which indicated the need of a simple change in equipment. This was carried out and the well has now been operating for 70 days, to the last report, without a rod break.

A more general application of well studies is covered in the work of one company in Kansas. A certain lease was producing some 80,000 barrels of fluid at a cost of about $2100 per month and with an average of one rod break per day. Water was increasing as were rod jobs and higher lifting costs were in prospect. Well studies were started to find out where improvement could be made. The result was that in six months' time lifting costs were cut $685, and rod jobs reduced to an average of one a month, though fluid produced was increased to 90,000 barrels. This company, through well studies and subsequent corrections in pumping conditions, effected a 32.6 percent reduction in lifting costs in spite of a necessary increase of 12.5 percent fluid production.

Another interesting application of well studies involve a major company and an equipment manufacturer. Materials were purchased for a new field that was thought to represent a certain type of pumping problem. After a few months' service, equipment trouble increased alarmingly. The situation was puzzling because there was no obvious reason for these results. The equipment was checked and found to be up to specifications in every way and the operations seemed perfectly usual. It was finally decided to make well studies of typical wells to definitely establish the pumping conditions the equipment had to meet. Through this cooperation of producer and manufacturer it was found that certain unexpected conditions had developed in these wells, and the equipment was promptly changed to meet this unguessed situation. The result has been a satisfactory and profitable development for both the producer and manufacturer.

There are any number of other illustrations available where well studies have paid for themselves several times over. The incidents cited show that the producer has both a direct and indirect benefit to be gained from well studies. To quote the engineer in charge of this work for one manufacturer: "You can't tell just what your materials are doing until you know the facts of the pumping conditions they are up against. We have found innumerable cases through well studies where pumping conditions were very different than had been supposed. Experience has also proved that conditions may vary greatly even between what apparently are the most similar of pumping wells. We have further learned that many times the improper functioning of some small part of the pumping equipment, which if known could easily be corrected, has resulted in costly failure of materials and large production losses due to down time." As this man points out, the production company will not only benefit directly from such work through obtaining more oil but indirectly through improved and better applied equipment.

The purpose, then, of a well study is to discover as accurately as possible the facts of the conditions in a pumping well and to coordinate these facts with other data to insure economic production. Most of these studies start with a dynamometer card showing the pumping characteristics of the well. Two facts are easily determined from these cards: first, the peak load and; second, the range of load; but from here on facts are more difficult to determine and only experience with the instrument and study of field results and data will bring the success looked for.

This condition can perhaps be illustrated by the use a doctor makes of a stethoscope in determining how a human heart is performing. If he finds something wrong, he then calles into use a number of other tools to either correct the condition or protect

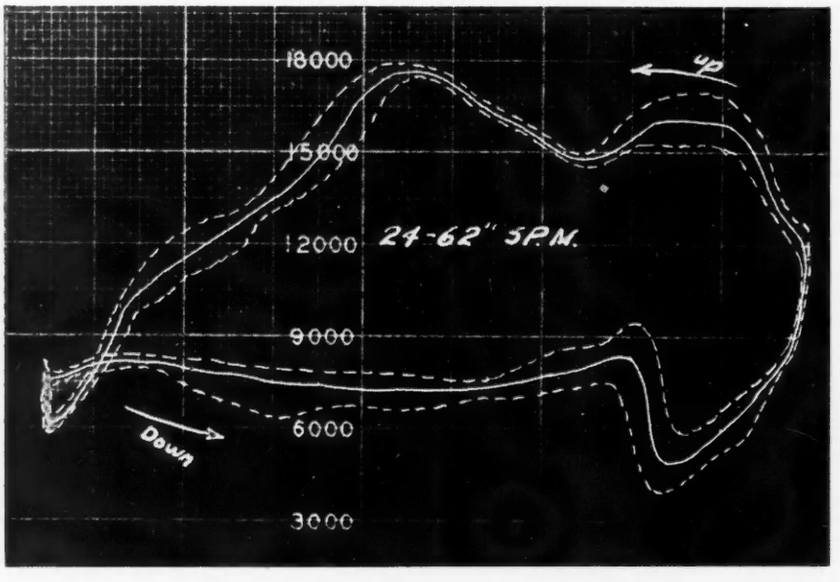


FIGURE 1

Dynamometer card and related data for well report. Note pound on down stroke

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THEY START AND RUN SMOOTHLY

Dayton Cog-Belts prevent damage to machines and tools. In many cases, these belts save thousands of dollars per year by cutting down repair bills. This is because Dayton Cog-Belts have greater shock-absorbing ability due to their automatic wedging action in the pulley grooves. They avoid starting and running shocks. They eliminate jerks and back-lashes.

They are the only laminated belts scientifically "built-to-bend." They are the only die-cut belts with raw edges which give leech-like gripping qualities that insure a steady, uniform flow of power with less tension and less strain on bearings.

But get all the facts by asking for a copy of our big new book, "The A B C's of V-Belts." It graphically illustrates and clearly explains the many advantages of Dayton Cog-Belt Drives. Write for your copy today.

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World's Largest Manufacturers of V-Belts
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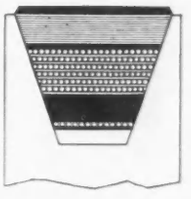
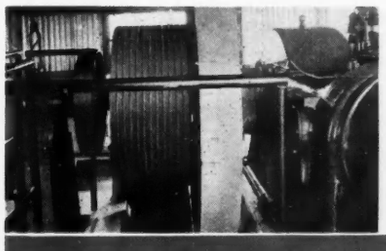
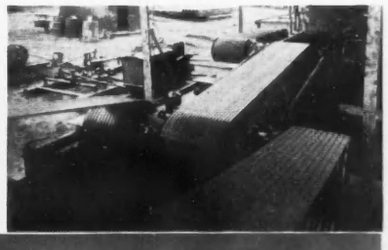
HERE'S WHY



When machines are started, or when peak loads come on, the Dayton Cog-Belt smoothly wedges itself automatically into a tighter grip in the groove—and cushions the shock.





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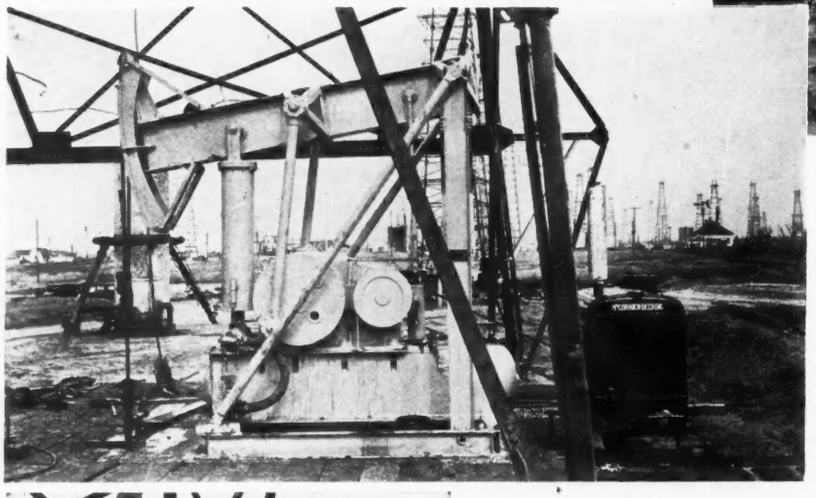
LACY "Bull Dog" COMPRESSED *Air* BALANCE FLOOR PUMPING UNIT

Eliminates centrifugal or kinetic energies of old fashioned counter-weight.

OD 60 UNIT
Operating in Mid-Continent Field



OD 58 UNIT
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Another OD 58 Installation

BECAUSE of the close proximity of the Air Cylinder to the Horse Head the bending moment on the beam has been reduced to a minimum. The Manufacturers of this unit have divorced entirely the counter balance problem from the Reduction Gears. The Air System which is adjustable is so designed on the various models to handle any counter balance problem coming within the range size of each model. This Air System is constantly fed with any pressure desired by the operation of a compressor located directly back of the Reduction Gears operating syncromoniously with the Beam.

This Compressor is adjustable and will maintain any given poundage that is desired. Constant air pressure is obtained through the use of a diaphragm valve which will perfectly counter balance any given load in the well. The Air Cylinder and the Piston are constructed of high grade cast iron. The Piston is equipped with 14 American Hammer Piston Company compressed air rings. The skirt of this Piston dips into a lubrication reservoir at the top of each stroke and constantly lubricates the walls of the cylinder. These units are equipped with Reduction Gears well known in the Oil Industry.

Advantages

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5. Easy to counter-balance while in operation.
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9. Steady power flow . . . no surging.
10. Relieves reduction gears of centrifugal forces.
11. Greater factor of safety . . . less bending moment on beam.
11. Uses any type of prime mover for power.

Efficiency and economy proved by every test by major operators over four years of field service.

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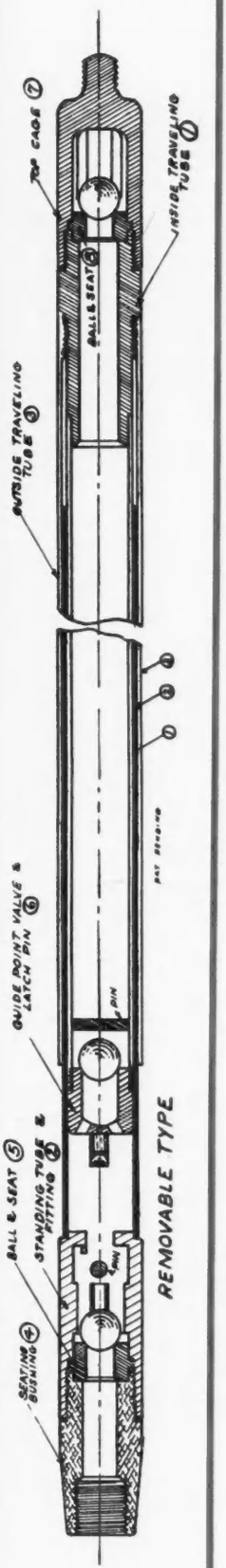

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2. **INTERCHANGEABILITY BETWEEN REMOVABLE AND RIGID TYPES MAKES FOR ECONOMY** . . . Careful inspection for accuracy in sizing and straightness insures uniformity. The only types not interchangeable are standing Tubes No. 2 and guide point Valves No. 6.

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4. **THE REMOVABLE TYPE** . . . is run and withdrawn with the rods.

5. **THE RIGID TYPE STANDING TUBE** . . . is screwed on a standing valve shoe and run with the tubing.

YOU WILL SAVE MONEY WHEN YOU BUY . . . AND WHEN YOU USE FLUID SEAL PUMPS.

Norvell-Wilder *Supply Company*

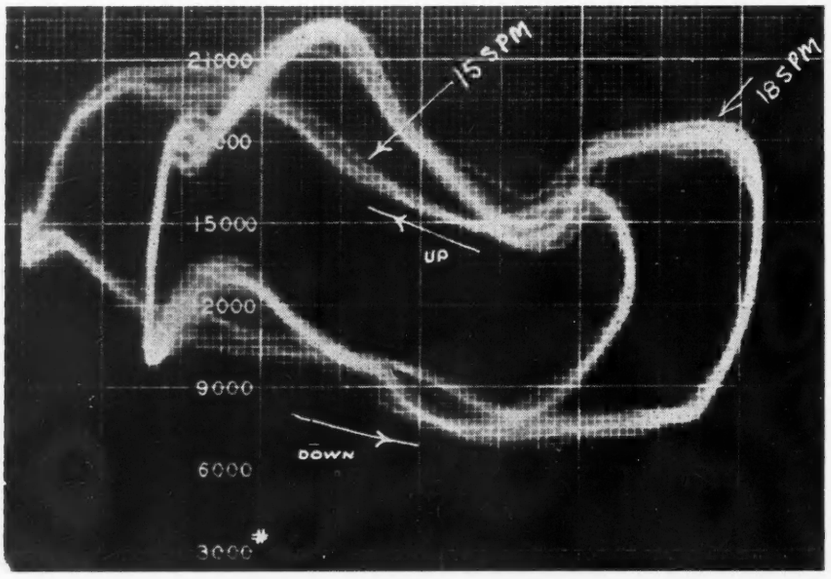


FIGURE 2

Dynamometer card from a well study showing rough operation before a few minor operating changes were made. See Figure 3 for the well's card after the changes were made

the organ. He may x-ray teeth, stomach and other parts of the body, study activities and general health, but he never stops with just what he learns from a stethoscope and his results are always governed by experience that tells him how to relate the various things he has found.

If the ordinary person bought a stethoscope, he would probably not even know what the things he heard meant and would be able to do little about them. This business of studying pumping conditions from dynamometer cards is similar and always a problem of many facts and much experience.

On the other hand there are a number of important things concerning pumping conditions that an experienced operator can tell from these cards. A sudden deflection in a load curve may indicate a pound which when associated with, say, the gas-oil ratio, fluid level or production record of the well may enable him to tell just what these sudden shocks are due to. Again a so-called rough card may from experience indicate loose surface equipment or a bad vibratory condition due to a critical speed.

Dynamometer cards of a well are, therefore, not in themselves sufficient. Their indications must be coordinated with other data such as a record of the well's production and operating speeds, the condition of its surface equipment, information as to size and type of material, data on fluid conditions and general lease experience.

A complete well study may include dynamometer cards, tachometer speed readings, polar diagrams, service records of equipment, fluid studies, production records and a graphical trouble analysis. The number of these factors involved in any one study will, of course, vary with the problem but generally a combination of several of them will be found necessary for a proper analysis.

In order to see how these factors work together let's consider one or two typical well studies. In one case a producer was experiencing a costly and unusual number of rod breaks in a Seminole well, to the extent that a new string of rods had six failures in 70 days of operation, five occurring between the 65th and 70th days. The well was then weighed, card being

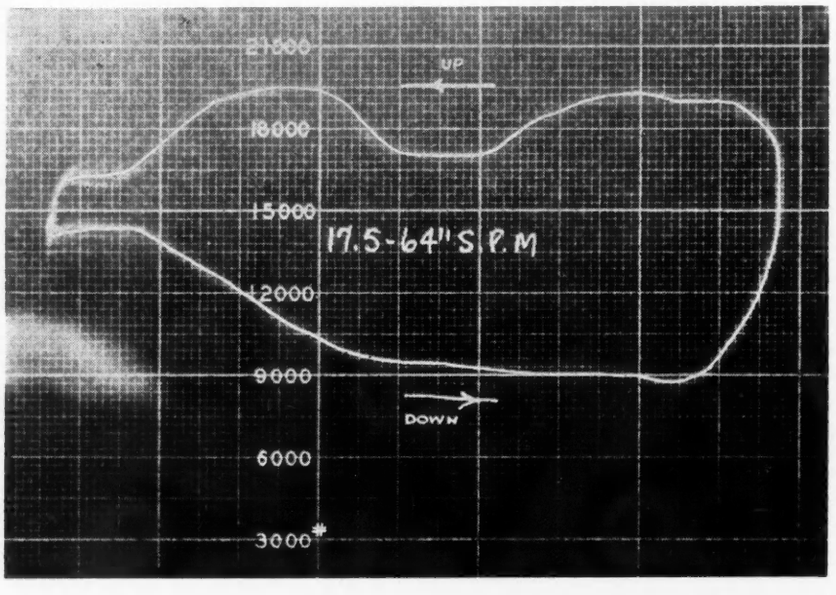
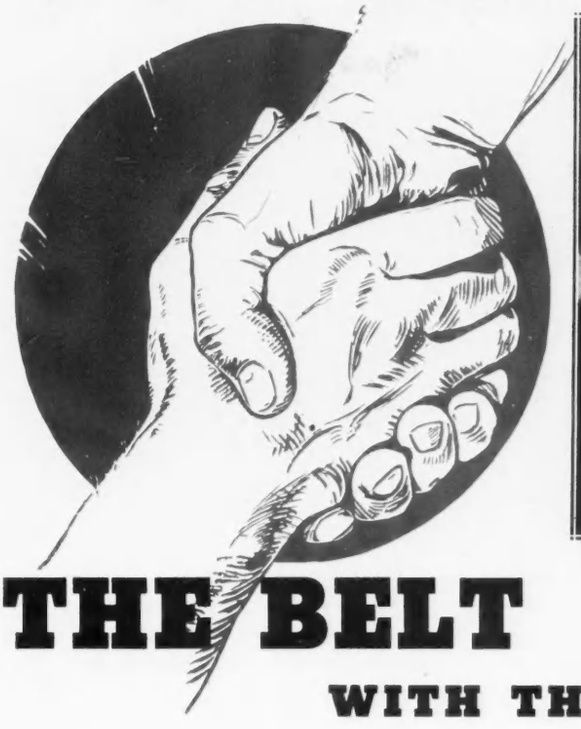
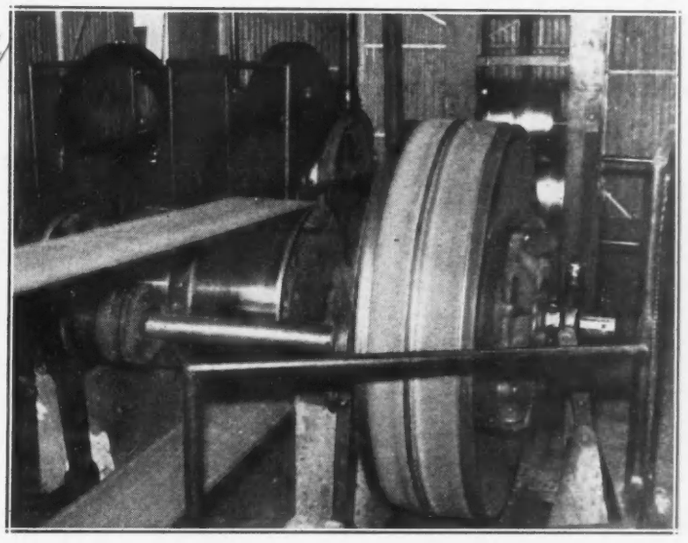


FIGURE 3

Dynamometer card on the same well as Figure 2 after correction in pumping conditions had been made. Note that the "jittery" motion is entirely removed.

SUPER EXCELO





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Super Excelo is constructed from strong, hard woven duck, giving longer life, greater overload capacity and more resistance to the heavy shocks encountered in drilling and pumping operations.

In addition to high pulley-gripping qualities and strength, Super Excelo Belts are free from "bootlegging" and endure as a result of the high quality, long-lived rubber friction compound.

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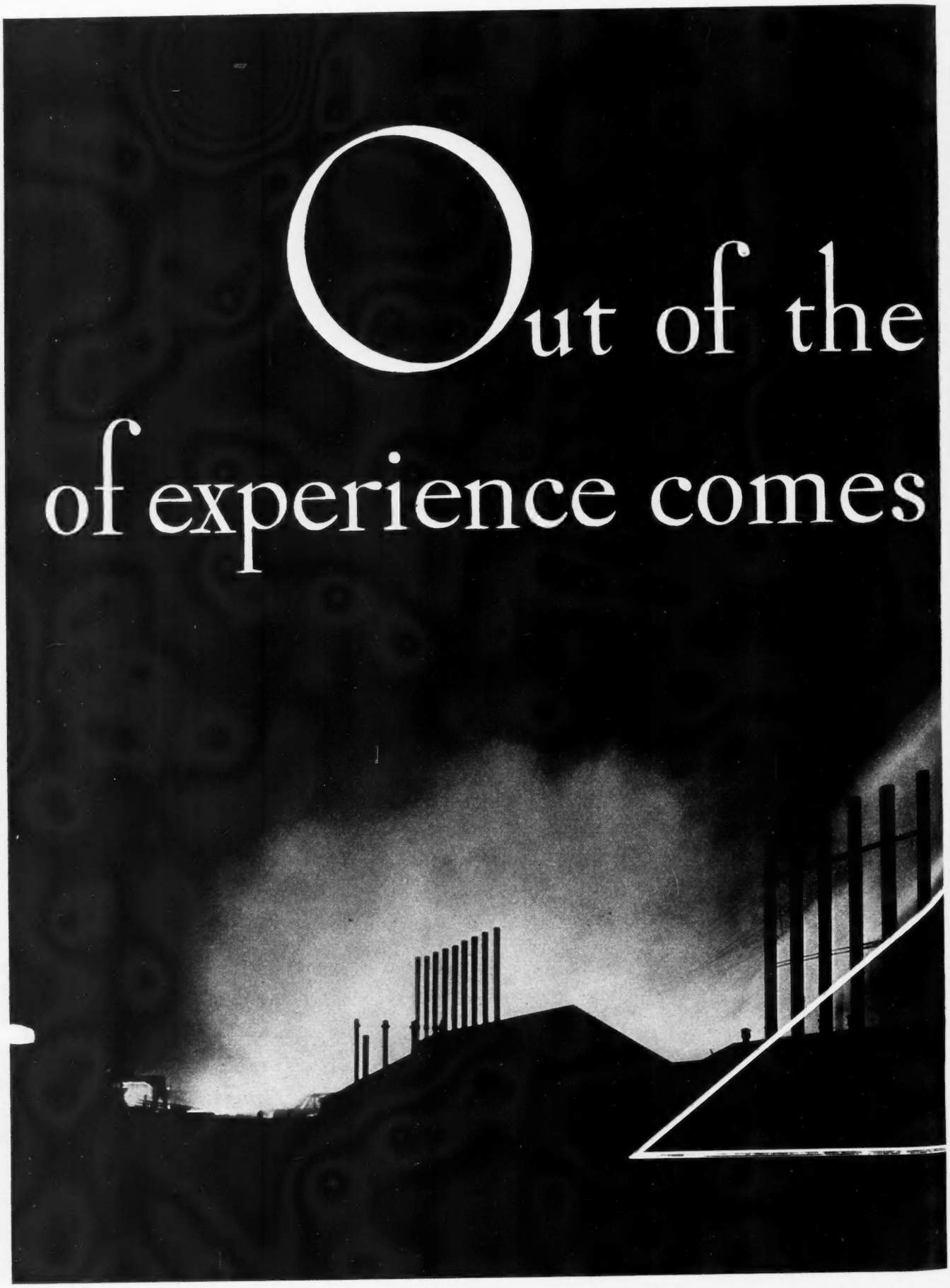
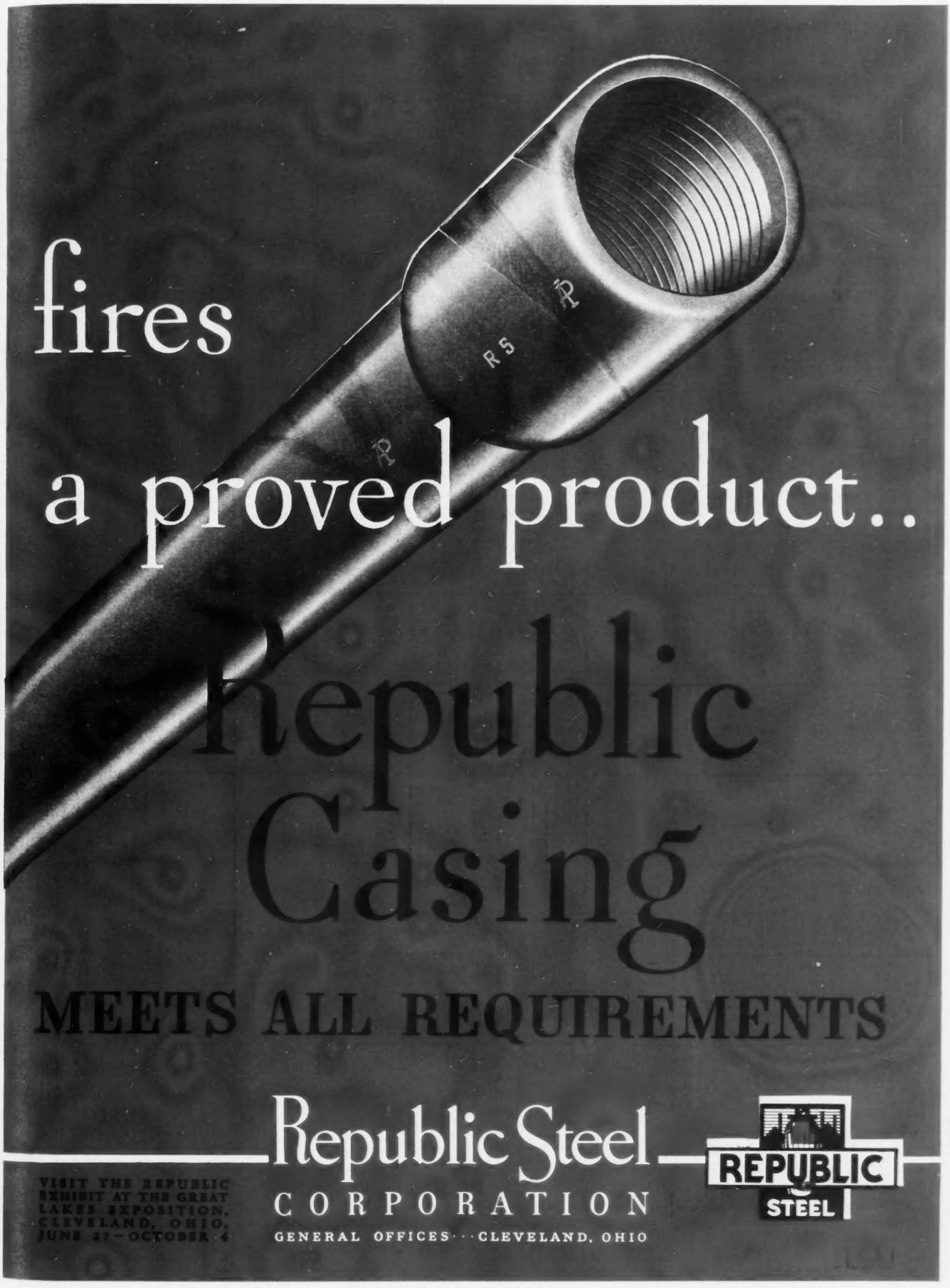

Out of the
of experience comes


fires
a proved product..
Republic
Casing
MEETS ALL REQUIREMENTS
Republic Steel
CORPORATION
GENERAL OFFICES · · · CLEVELAND, OHIO
REPUBLIC
STEEL
VISIT THE REPUBLIC EXHIBIT AT THE GREAT LAKES EXPOSITION, CLEVELAND, OHIO, JUNE 27 – OCTOBER 4

shown in Figure 1 and it was discovered that the pumping conditions were heavy (18,000 pounds) with a bad pound on the down stroke. Volumetric efficiency was found to be 36.2 percent for a 2¾-inch plunger. A study of fluid conditions showed all oil with neither salt water nor sulphide present. The rods in use were soft and designed for corrosive conditions.

The discovery of these facts made it evident that some steps should be taken to overcome the bad pounds and poor volumetric efficiency through reduction in pump size to meet the formation conditions. It was further shown that a stronger and less expensive rod material was better fitted for this heavy non-corrosive pumping.

Another well study was made on a troublesome well at Oklahoma City. Figure 2 is a copy of the card on this well as it was being operated. It will be noticed that this card was taken over a minute's duration at two speeds and distinctly shows that the well motion does not repeat itself on consecutive strokes. The peak load (22,500 pounds) is very high though the cards are fairly free of pounds or unusual impacts. A check of the equipment being used showed it to be in good order and proper for the conditions. A graphical analysis of sucker rod breaks (Figure 4) showed them to be grouped in a section of the ¾-inch rods between 3500 feet and 4500 feet.

The "jittery" appearance of the cards and the localization of the breaks suggested the presence of a critical speed. In order to get away from any such condition, the stroke was lengthened from 54 inches to 64 inches, strokes per minute changed from 18 to 17.5 and a 2-inch plunger substituted for the 1¾-inch previously used.

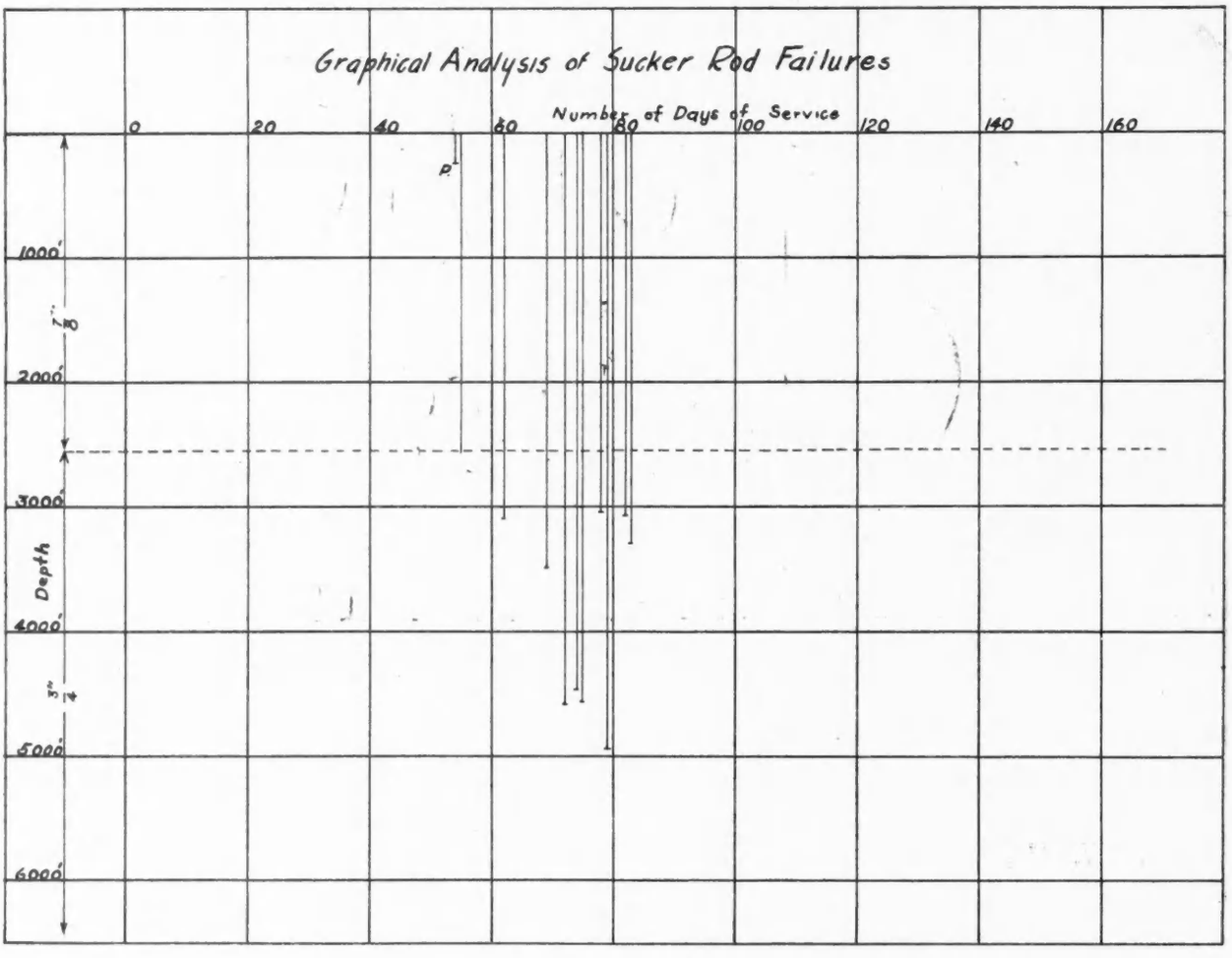
Figure 2 when compared with Figure 3 gives a good "before and after" picture, as the card shown in Figure 3 was taken after these changes were made. The "jittery" condition was entirely removed, rod breaks reduced from 11 in one month to 3 in three months and production increased from 200 barrels to 378 barrels a day. In other words this well study cut rod breaks 72.8 percent and increased production 89 percent.

Fluid pounds are one of the bad factors in pumping wells that are particularly damaging to sucker rods, and a well study discovered the one shown in Figure 5. Rod failures had occurred between 3000 and 4000 feet at the rate of eight breaks between the 70th and 80th days of operation. The pound was eliminated by lowering the pump and correcting the counterbalance with the result that rod breaks were reduced to four in the next 80 days of operation, an improvement of 50 percent on a full 80-day operating period.

Well studies have also been used to check the mechanical efficiency of surface equipment. Dyna-

FIGURE 4

Graphical analysis of rod breaks caused by rough condition shown in Figure 2



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We can make immediate delivery on all sizes of the Jensen Improved Model C Pumping Units from store stocks and distributing warehouses within a few hours after orders are received.

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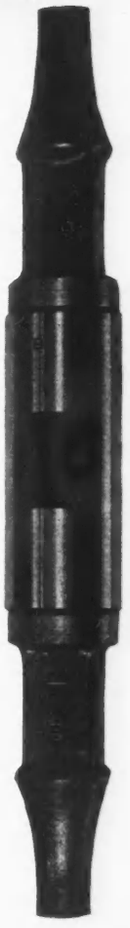

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We give special attention to carload orders for Jones Sucker Rods for direct shipment to any Mid-Continent or Gulf Coast locality. Co-operating with the factory, we see that shipments are followed-through to arrive at their destination in the quickest possible time. Supplementing this direct shipment service is our large stocks of the various grades of Jones Rods carried at our store stocks, where full strings or less may be secured immediately, any hour of the day or night.

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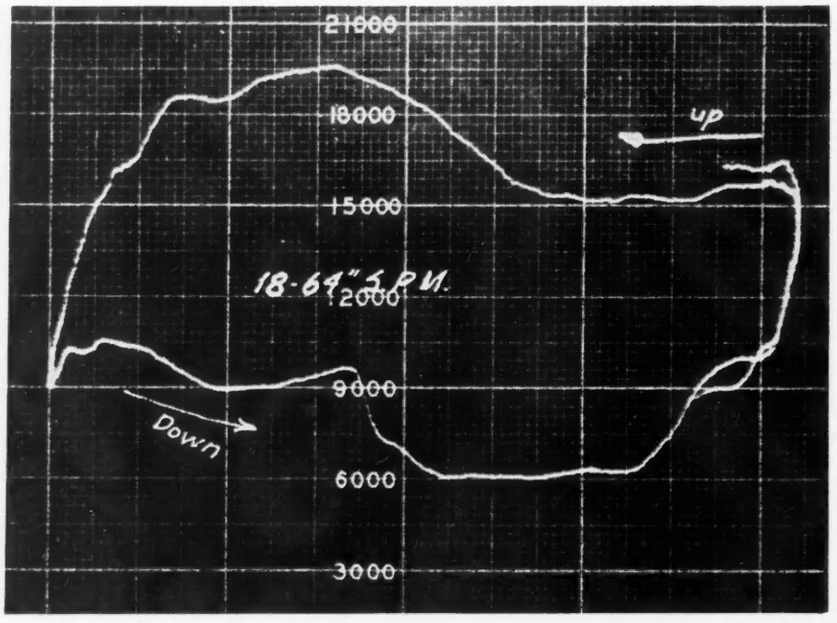


FIGURE 5

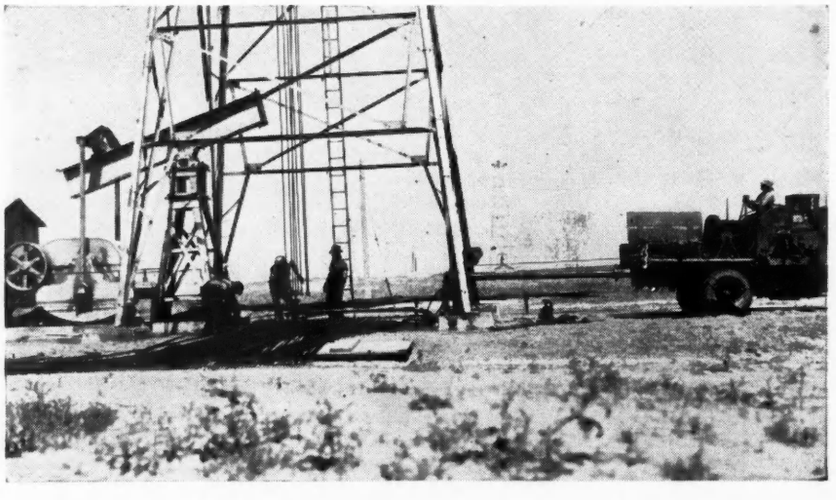
Dynamometer card from well study showing fluid pound

mometer cards were taken to determine the variation in polished rod horsepower, between clockwise and counterclockwise motions of the crank. A difference of five percent to seven percent in operating horsepower requirements has been discovered through these studies.

The development of well studies is undoubtedly in its infancy but unusual progress has been made during the past year. The opportunity for lowering lifting costs through the collection and collaboration of accurate data on pumping conditions seems to justify an extensive effort. Dynamometers play an important part in these studies but are not in themselves sufficient, and must be used in conjunction with other data. Experience in relating dynamometer cards with field results will undoubtedly bring a better understanding of unknown factors.

Several major companies are now starting programs for the extension of well study activities. One company is putting an engineer equipped with a dynamometer in each of its important pumping divisions for the special study of pumping problems. Another company has assigned an engineer equipped with a dynamometer, tachometer and other material to well study work as a full time activity and reports considerable progress in improving a variety of pumping problems.

The progress of these well study efforts should prove particularly interesting. Producers will unquestionably enjoy a double benefit from this work, first, because of increased recovery at lower cost and; second, because of improved equipment which is the natural result of a manufacturer's better understanding of the industry's needs.



Pulling and checking sucker rods as a part of a complete well study.

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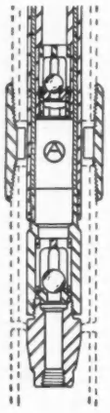
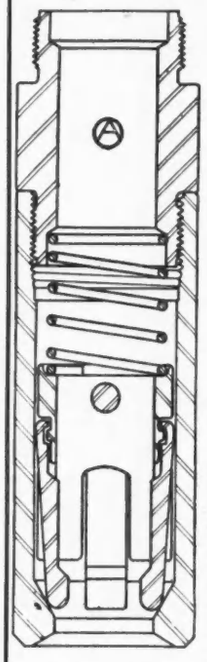


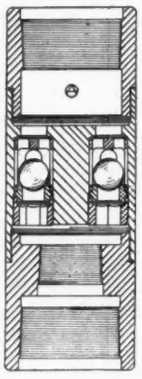
Combined Collar and Cage

Secures maximum fluid from working stroke with Rod Sectional Liner Stationary Pumps equipped with Perry Plungers. Plunger travels closer to working valve and closes space where gas might trap.



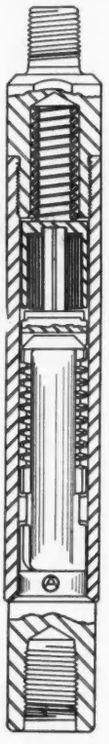
Heavy Duty Standing Valve Puller

Allows traveling unit to be set down on the pin any number of times without injury to either member. Connects only when rods are rotated to the right after setting down on standing valve, giving positive control of puller.



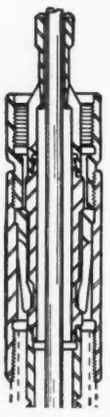
Multiple Standing Valve

Replaces regular standing valve of Tubing Sectional Liner Pump. Gives larger fluid capacity, less ball lift, faster valve action, and by dividing the load on to several valves; reduces the load per valve. Permits positive comparison of seat and ball life of different designs or metals.



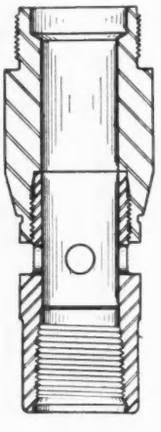
On-or-Off Attachment

Permits connection or disconnection of sucker rods at the pump. Insures against stripping jobs in any installation. Guide coupling should be used both above and below this unit in the rod string.



Top-Lock Hold-Down

Allows stationary type rod pump to be completely suspended from its upper end and prevents sand packing between pump and tubing. Gives positive anchorage and easy removal of pump.

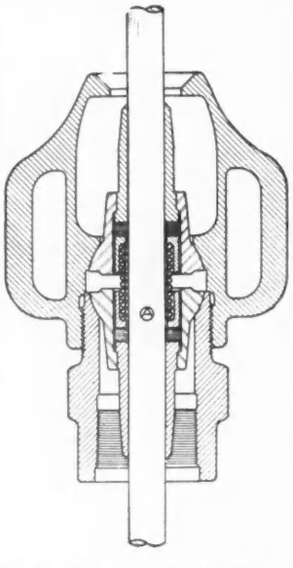


Anchor Hold-down Bodies

New 3-piece construction gives increased service life with ease of reconditioning. Requires no change in the shoe. Affords choice of metals in seating ring.

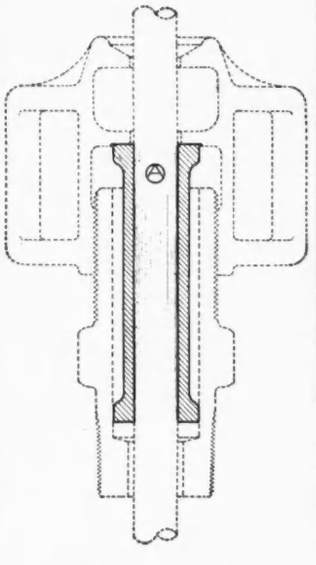
Ritter Standing Valve Body

Makes reconditioning easier and lengthens service life. Simplifies assembly and removal of the lock ring and prevents damage to ring. Facilitates grinding of the body into the shoe.



Self-aligning Stuffing Box

Metal-to-metal seal. Accurately fits polished rod. Ball joint on followers makes the box 100% self-aligning. Grease fitting permits lubrication of polished rod and ball joint. No grease leakage.



Frahm Stuffing Box Follower

Seals around the polished rod for long periods of time without leaking and seals without repacking or adjusting. Will not burn for lack of lubrication if the well pumps off. Removes fire hazard.

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OIL WELL PUMPS **AXELSON** **SUCKER RODS**

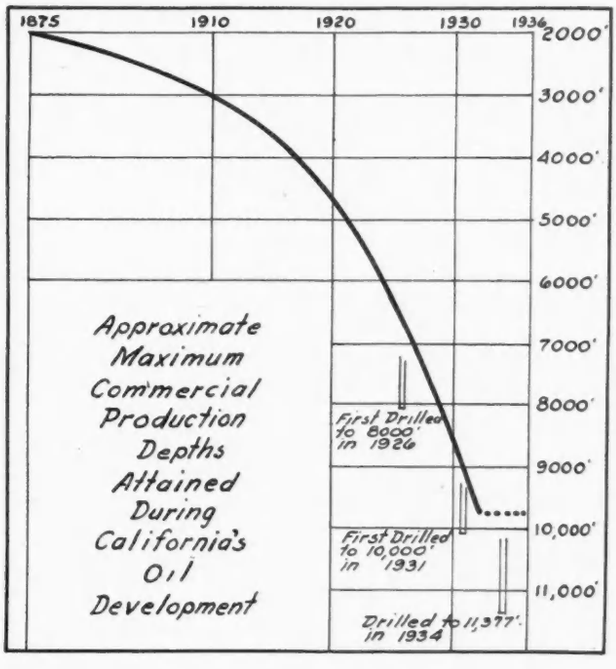
Production Lifting Methods in California

OPERATORS STUDYING PROBLEM OF INCREASING WELL DEPTHS

By WALLACE A. SAWDON,
Petroleum Engineer,
Los Angeles, California

WITH oil being taken from depths ranging from a few hundred feet to nearly 10,000 feet, it is natural that production lifting methods of practically every known variety are in use in California. Deep drilling has resulted in deep production; and although no oil in commercial quantities is being produced from depths below 10,000 feet, there is a probability that such deep production will be obtained in the near future. The eventual pumping of such depths has already been given consideration. Many wells now flowing or on gas lift from depths of seven or eight thousand feet, however, have also presented the question as to what method must be used for their economical pumping.

The increasing productive depths that have been reached during the development of California's oil industry are indicated in the accompanying graph. The greatest depth was reached in 1932 with oil coming from 9710 feet in a well at Ventura. Greater depths have been drilled at various locations throughout the state but no commercial production has been there encountered. The showing of oil at 10,921 feet in Union Oil Company well at Kettleman Hills, however, indicates the possibility of production from depths below the present oil zones in that field and this probably offers the most immediate chance for 10,000 to 11,000 foot oil in the state.



The total number of producing wells in the state is 16,571, of which 4425 are shut in. Of the 12,146 wells actually producing at the present time, 541 are flowing, 260 are on gas-lift and 11,345 are pumping. Many of the pumping wells are, of course, very old and very small. While in actual numbers the flowing wells comprise but 4.5 percent of the total producing wells, they supply 28.5 percent of the oil being produced and have an estimated capacity of about 37 percent of the state's total. Production by gas-lift is not as great in proportion as in several other producing areas in the United States; but the wells on gas-lift in California—about 2 percent in number—are producing 10 percent of the oil and have an estimated capacity of 12 percent of the total. The average production and the average estimated capacity per well are given in the following table:

Average Daily Production per Well	
Total	46.2 Barrels
Flowing	295.9 "
Gas Lift	222.7 "
Pumping	30.2 "
Average Daily Estimated Capacity Per Well	
Total	66.0 Barrels
Flowing	547.2 "
Gas Lift	371.8 "
Pumping	36.1 "

All data above are based on a report of J. R. Pemberton, Union Oil umpire, Central Committee of California Oil Producers.

Pumping Equipment

Although there are many central pumping installations throughout the state, the individual pumping unit is widely used in most California fields. The prime mover employed is engine and electric motor. Counterbalancing and length of stroke have been given considerable attention and many of the larger companies use dynamometers consistently to procure maximum efficiency with their pumping equipment.

In a number of instances, multiple wells are being pumped from one location with either separate or combined pumping units. In the Long Beach field several wells have been drilled with two holes put

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down at each location. These two wells are drilled vertically and kept five feet apart to produce from different depths. Both wells, when completed, are pumped with one prime mover that drives two beams. It is claimed that the one prime mover operates more smoothly than when pumping a single well. The practice is to put one beam on the third hole and the other on the second with both being powered by a 50-horsepower engine.

When directional drilling is employed to utilize one surface location for two or more wells that are directed to predetermined points on the sand which will give proper spacing in the productive zone, the problem is a little different. As previously described[1], three wells so drilled at Elwood on two-foot centers are being pumped with three separate and distinct pumping units. Any one or two of these wells can be shut down without interfering with the production of the other well or wells. In cleaning out or repairing, however, the close spacing of the three wells on the surface will often necessitate the shutting down of all three wells when work has to be done on any one of them. While wells are flowing or are on gas-lift, no interference to production is caused by work on the other well.

California has naturally offered excellent opportunities for experimental and development work on rodless pumps. At the present time there are several new devices in various stages of perfection, but actual results achieved are not yet available for discussion. The hydraulic type that has been in commercial use for a few years and the plunger-lift type more recently developed are both, however, in commercial service at the present time.

In the Kettleman North Dome there are two wells now being pumped with the plunger-lift type pump. This device is designed to produce oil from deep wells by means of the energy supplied by the gas being produced with the oil or, when such native supply is insufficient, by an additional supply of gas introduced into the well. The equipment consists of a string of special smooth bore tubing in which an all-metal plunger travels the entire distance from the top to the bottom and then back to the top of the tubing at each stroke.

The plunger has a loose fit in the tubing; it falls by gravity but is raised by the gas pressure to lift a slug of oil to the surface. It does not lift a column of oil extending the full length of the tubing but is so designed as to produce the fluid in short heads that are usually not over 300 feet at a stroke.

An installation of the hydraulic type of pump is soon to be made in one of the deep wells at Kettleman Hills. This device utilizes oil which is filtered from the well's production and pumps it down through a tubing string as power oil to the unit submerged in the well. This oil is then returned with the production. The entire apparatus consists of the hydraulic power unit at the surface and the production unit in the hole. The former contains a motor driven pump and the latter consists of an engine and production pump in a single unit.

What can be considered deep pumping with rods, however, is being done in California where such sands as the Clark-Hathaway at Santa Fe Springs (with an average depth of nearly 8000 feet) are being so produced.

[1] "Multiple Drilling Successfully Permits Three Wells Under One Location," by Brad Mills, The Oil Weekly, April 29, 1935.

The matter of crooked holes is another proposition. Where a well inclines with a gradual deviation from the vertical there will probably be less trouble than in a "straight" hole which may have "dog legs" that are the chief cause of trouble. Directionally drilled holes, when properly drilled, should cause no more trouble during pumping operations than the average vertically drilled well. In fact, the precautions taken in directional drilling will frequently eliminate kinks that may result when a hole is kept straight. The carelessly drilled hole which is allowed to wander at will is, of course, an unknown quantity and may or may not cause trouble when it is put on the pump.

Gas-Lift

The availability of gas under proper pressure is naturally most influential in determining whether a well shall be put on gas-lift or on the pump when it stops flowing. In California the general principles of gas-lift are followed with variations to meet the well conditions and the sources of supply.

At Kettleman Hills some of the wells on gas-lift are supplied by the gas direct from other wells. These supply wells are high-pressure locations with excessive amounts of gas. The gas is taken from them and the light oil being produced is trapped off. The gas pressure is regulated to that required by the gas-lift operations and the production is governed by the amount of gas required.

Other gas-lift wells at Kettleman use residue from the gasoline plants and the pressures necessary for gas which is supplied by compressors range from 150 pounds to 500 pounds per square inch. The only other gas-lift operations in the San Joaquin Valley are in the Mountain View field, which is a comparatively new development.

Along the coast, three fields have wells on gas-lift. In the Ventura Avenue field, 25 of the deep wells are being produced by gas-lift. In the Elwood field there are 11 and at Rincon 8. Gas-lift on pier locations in the latter two areas, where wells are drilled either vertically or directionally into the structure beyond the Pacific shore line, has a distinct advantage and operators produce their wells by this method when conditions make it possible.

In the Los Angeles Basin there are 173 wells on gas-lift at this time. The greatest number are at Santa Fe Springs where 48 are so produced. At Long Beach there are 27, at Brea-Olinda 24 and at Dominguez 23. The other fields in this district employing gas lift are Seal Beach, Rosecrans-Athens, Huntington Beach, Playa del Rey, Richfield, West Coyote and Inglewood.

Flowing Wells

The Christmas tree was highly developed in California operations, but the present well connections making it up are considerably more simple than they were originally. Fittings, however, are probably more rugged than formerly and with the high pressures so frequently encountered at the great depths now producing, the general practice for such wells is to specify fittings good for 5000 to 6000 pounds per square inch.

There also has been a trend toward setting the entire production hook-up below the derrick floor. Cellars on wells drilled with pressure control equipment are deeper and can readily accommodate the flow connections. The terrain at fields such as Kettleman Hills and Ventura was, perhaps, influential in

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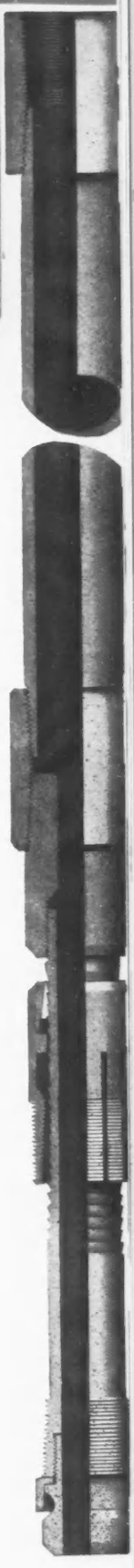

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EASY TO RELEASE AND SET PACKER . . . as threads are right hand and screw down instead of up as tools with a left hand thread do. With left hand thread tools, tension in the pipe is often insufficient to allow unscrewing upward, resulting in the liner being pulled out of the well.

When released, the tool continues down until setting collar rests on top of setting sleeve, forcing same down until canvas is firmly compressed.

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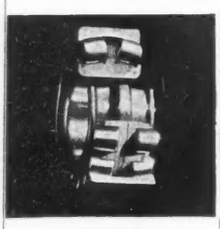
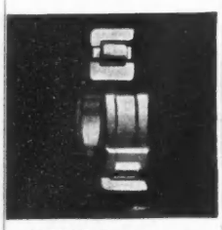
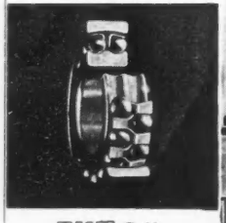


SKF
Spherical Roller Bearing



SKF Cylindrical
Roller Bearing



SKF Self-
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SKF Single Row Deep
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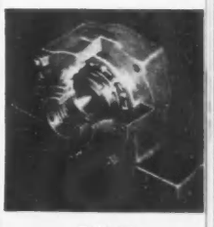

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developing this practice since hillside locations made it economical as well as better in many cases. At Kettleman the cellars are built to accommodate the flow connections below the derrick floor whenever feasible.

Although many of the production hook-ups are built at the well, some companies order complete connections made up at the shop of some manufacturer of high-pressure fittings. Union Oil Company, however, makes up the Christmas tree, lead lines and manifolds at the company's shop at Santa Fe Springs for shipment to locations as far distant as Kettleman Hills. The assembly is tested at the shop to 6000 pounds per square inch and only the lead lines and manifolds are disconnected for shipment.

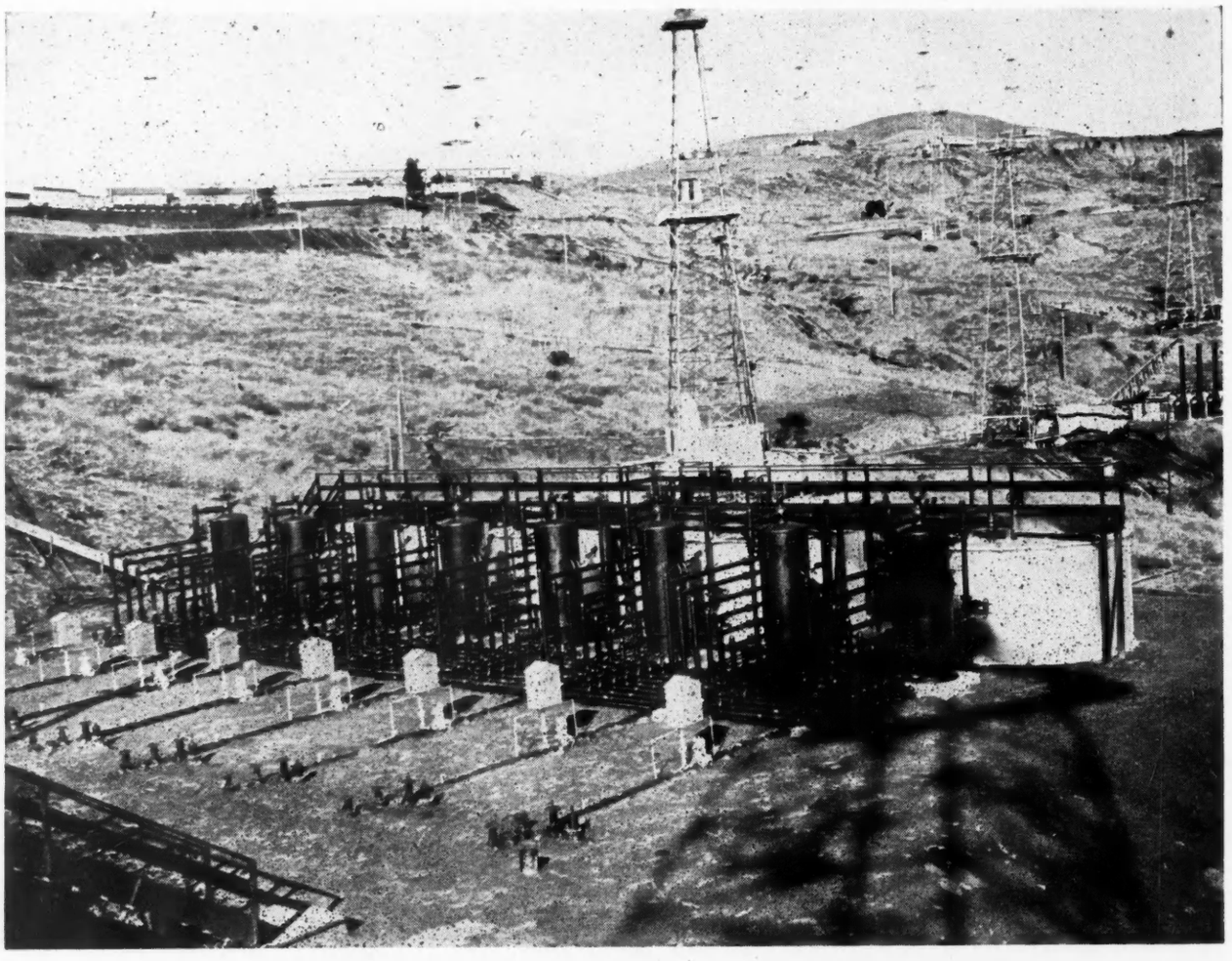
Flow Control

In many cases where large leases make it possible, production from a number of wells is often run into a battery of tanks where is also placed a battery of separators. The flow of oil and gas from each well is controlled by manifold hook-ups which can divert the oil and gas to meet operating conditions with considerable ease.

A great deal of work has also been done in applying oil meters to measure individual well production. Both the gravimetric and the displacement types of meters are being used in various fields and under different conditions throughout the state. While none of the meter installations have aimed to supplant tank gauging of oil for sale to pipe lines, there has been considerable economy obtained in measuring individual well production since the oil and gas from a number of wells can be turned into a central separator and tank system immediately after passing through a meter located at the well. Different conditions naturally govern the location of the meter and also the type of meter to use.

Well repair work and well servicing are now being widely done with portable equipment. Some of the larger hoists being used are virtually rotary draw works and can be equipped with rotary drive attachments. Such equipment is operated by the production department and facilitates the maintenance of wells to a considerable extent. The hoists and attachments are mounted on tractors, trucks or trailers and are powered by gas engines, Diesels or electric motors.

This battery of tanks with separators is designed with a complete manifold system that provides complete flexibility in handling oil from a number of wells.



THOUSANDS SAW AND APPROVED

these principles of better pump construction at the Oil Show

Cross-section view of power end of Gardner-Denver 7¼ x 14 FXK Power Pump.

If you "looked inside" the Gardner-Denver 7¼ x 14 FXK Power Pump at the Oil Show, you already know why Gardner-Denver leads today in pump design.

Here are some of the features which make these pumps first choice in any comparison—

- Short, straight crankshaft for maximum strength . . . no anchor in center of shaft . . . stresses and strains balanced at sides of power frame.
- Eccentrics cast integral with hub on which main herring-bone gear is mounted, thus providing much greater rigidity.
- 25% greater bearing surface with continuous type herring-bone gear than with ordinary spur gear.
- Timken tapered, adjustable main bearings—Hyatt roller jackshaft bearings.
- One-piece frame, with special reinforcements where stresses from shock loads are greatest . . . exceptionally compact construction.
- Famous Gardner-Denver Divided Fluid End—no inner baffles to be cut through by mud.

SINCE 1859

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Materials
Workmanship
Value

GARDNER-DENVER COMPANY • 102 Williamson St. • Quincy, Illinois

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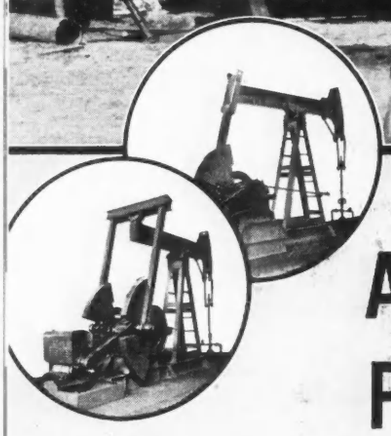
Continental Supply Company, Continental Bldg., Dallas, Texas • Emsco Derrick & Equipment Co., 6811 So. Alameda St., Los Angeles, Calif.

GARDNER-DENVER



AN ADAPTABLE PUMPING UNIT

and a Complete Line of Pumping Equipment

An outstanding feature of the new JARECKI Pumping Unit is its adaptability to suit individual pumping conditions. It may be installed as a twin-crank unit to pump a single well, and later converted to a single-crank type to pump additional wells. Conversion from twin to single-crank type, or vice versa, is accomplished without removal from foundation. Three sizes of helical reduction gears may be interchanged on the unit to suit individual well requirements. Of exceptionally rugged construction, the JARECKI Pumping Unit will give years of dependable service with a minimum maintenance expense.

These photographs of a typical JARECKI pumping installation illustrate a JARECKI Single-Crank Pumping Unit handling several wells through accessory equipment. JARECKI offers a complete line of surface pumping equipment.

Jarecki
MANUFACTURING COMPANY
"Since 1852"

General Offices—St. Louis, Mo. Home Office and Factory—Erie, Pa., U. S. A.
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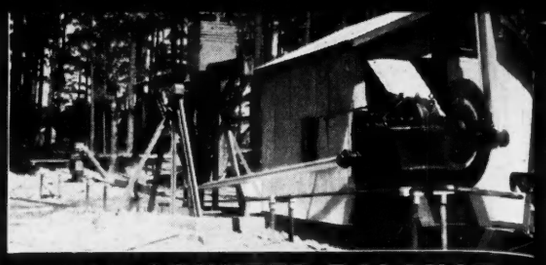
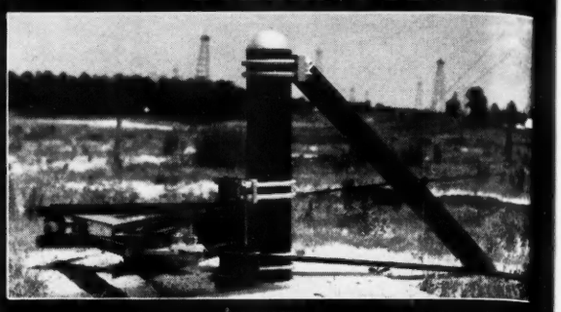
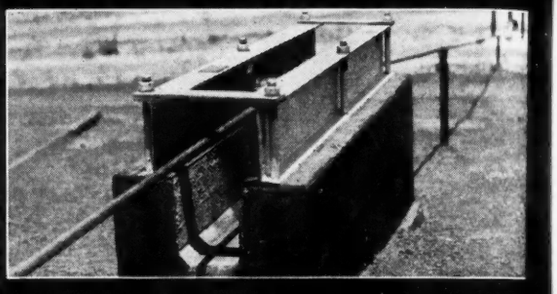


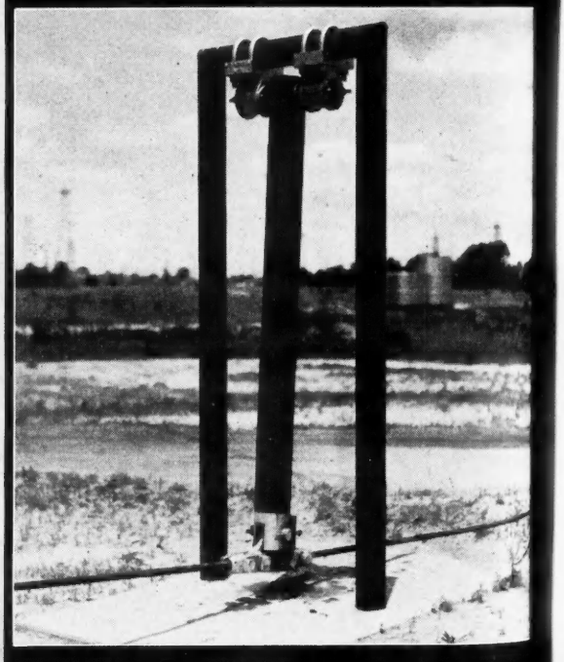
★ COUNTER-BALANCE STROKE POST



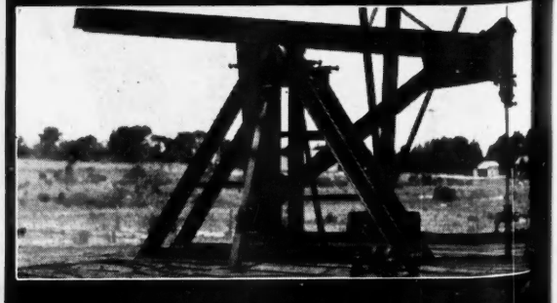
★ SWING



★ ROLLER HOLD-UP



★ SWING HOLD-DOWN



★ PUMPING JACK

Underground Corrosion

METALLURGY IS CHIEF MEANS OF ATTACKING THIS PUMPING EVIL

By BRAD MILLS, Associate Editor

UNDERGROUND pumping equipment is susceptible to attack from corrosion in many fields that yield a good grade of crude oil. Brines produced with the oil in several fields are contaminated frequently with hydrogen sulfide forming a combination that greatly increases the rate of corrosion of metals. Corrosion has increased operating costs in all sour oil fields, but it has not been a barrier to profitable production in fields that otherwise might be produced at a profit. Operators and manufacturers have gone a long way toward reducing the effect of corrosion, the development of special alloys and less severe use of equipment that suffers fatigue having been major factors in the improvement. The service life of pumping equipment has been more than doubled in many fields.

Corrosion in its many forms is an ever present factor. Its detrimental effect in deep wells is better understood than its effect on surface equipment. The reason for this is evident, since the sucker rods, tubing, pumps and casing are subject to intense and varying stresses. Corrosion attack while the material is stressed greatly increases the liability of failure.

It is not within the scope of this article to list the many types of corrosion mediums and their reactions on various metals or to go into detail on electrolytic or galvanic reactions. It is an accepted fact that one or more of these reactions do occur in every well. The severity with which these reactions deteriorate the equipment depends upon the formations in the hole, percentage of water and gas, the difference in the potentials of the metal parts and the presence of stray underground electric currents. Since it is practically impossible to eliminate these factors as they may occur at irregular intervals and without warning, it is necessary that we turn to the development of materials that will withstand these reactions at a cost that will allow economical production.

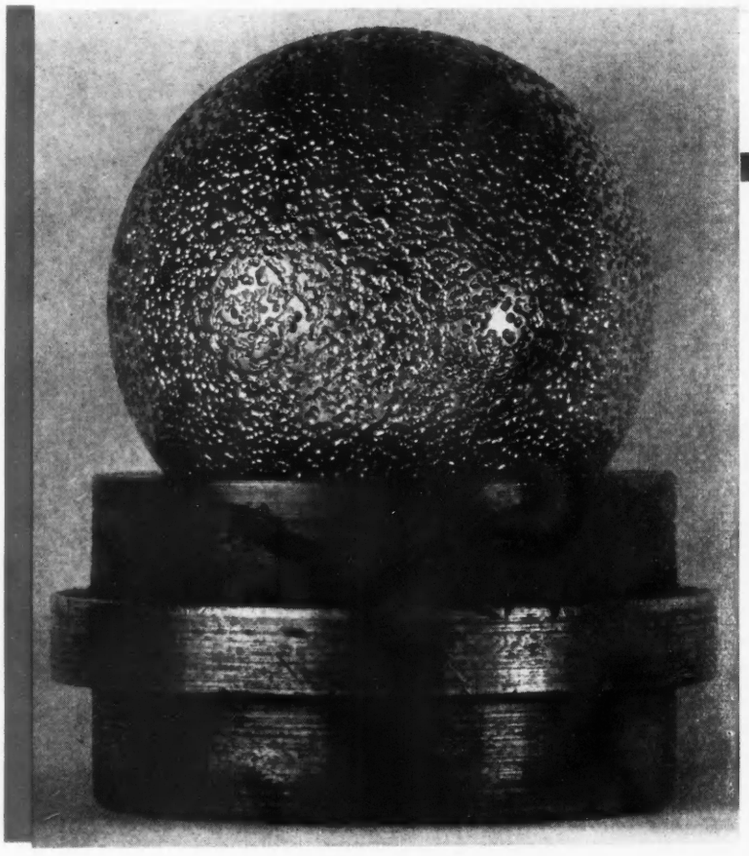
There are many types of coatings which may be applied to the surface of the metals which effectively prevent corrosion so long as the coating is intact. However, practically every portion of sub-surface equipment for producing the oil must withstand a great deal of abrasion. The abrasion causes the protective coatings to be worn or cracked off and corrosion being at these points. In some instances a protective metallic coating may continue to protect the steel fittings after rupture of the coating has occurred due to the ease with which the coating will corrode with respect to the steel. This is true in the case of a metal part being coated with zinc or galvanized. This is due to zinc being electro-positive to steel. Thus when the coating is broken the well fluid acts as an electrolyte and comes in contact with both the coating and the base metal at the point where the coating has been removed. An electric current is set up passing from the zinc, which constitute an electro-positive pole, and to the steel which is electro-negative in this instance. Thus the corrosive action is concentrated on the galvanized or zinc coating and will continue until it has dissolved unless some other outside current is introduced which deflects the natural flow of the current.

The opposite of this condition occurs with nickel, tin or lead coatings, these metals all being electro-negative to steel. Consequently, better protection is afforded as long as the coating remains unbroken but as soon as the coating is broken, the fluid coming in contact with the steel and metal coating, sets up an electrolytic current running from the steel which is electro-positive in this instance and to the electro-negative coating. This will cause the steel fitting to corrode, or to dissolve, leaving the coating practically untouched by corrosion.

In view of the hazards with coated fittings, it is necessary that we turn to the other alternatives to develop steels or materials with various alloys which make the material resistant to these influences through the entire body of the metal. Here we run into complications again, these being primarily the scarcity of the alloys which resist the majority of these corrosive influences, the exceedingly high cost of refining or separating these elements from the impurities with which they are found, and the greater care which must be exercised in the manufacture of the steel. Consequently, a majority of these are higher in price than is commercially practical when considering the tonnage required by the oil producing industry.

The greater cost of the alloyed steels is not the major factor when compared to the additional cost of manufacturing products from steels of this type. It is necessary to install special furnace equipment for higher melting temperatures, required for these alloy steels, special forming machines for rolling and forging with much more sensitive heat-treating control instruments. The equipment manufacturer must also install special equipment for subsequent heat treatment, also high speed tools with which to cut these much tougher and harder steels.

It is quite obvious that unless an outlet for a greater volume of these specific requirements is made the expense involved tends to prohibit their manufacture. A great deal of progress has been made in the refinery division of the oil industry in this respect. The trend has been toward the addition of chromium and nickel in various quantities from the four to six percent chromium steels with no nickel, and up to 22 percent chromium with low and high carbon contents to enable hardening for parts which must offer great resistance to abrasion as well as corrosion. Other combinations such as 18 percent chromium and eight percent nickel, 12 percent chromium and



This badly corroded ball had a service life of only five days
—Courtesy Stanley Gill.

two percent nickel, 33 percent nickel and four to six percent chromium, are being used with much success. These steels may also contain smaller amounts of molybdenum, vanadium, titanium, boron and many other of the rare alloys. Usually very small percentages of these are required to greatly change the physical properties of the material.

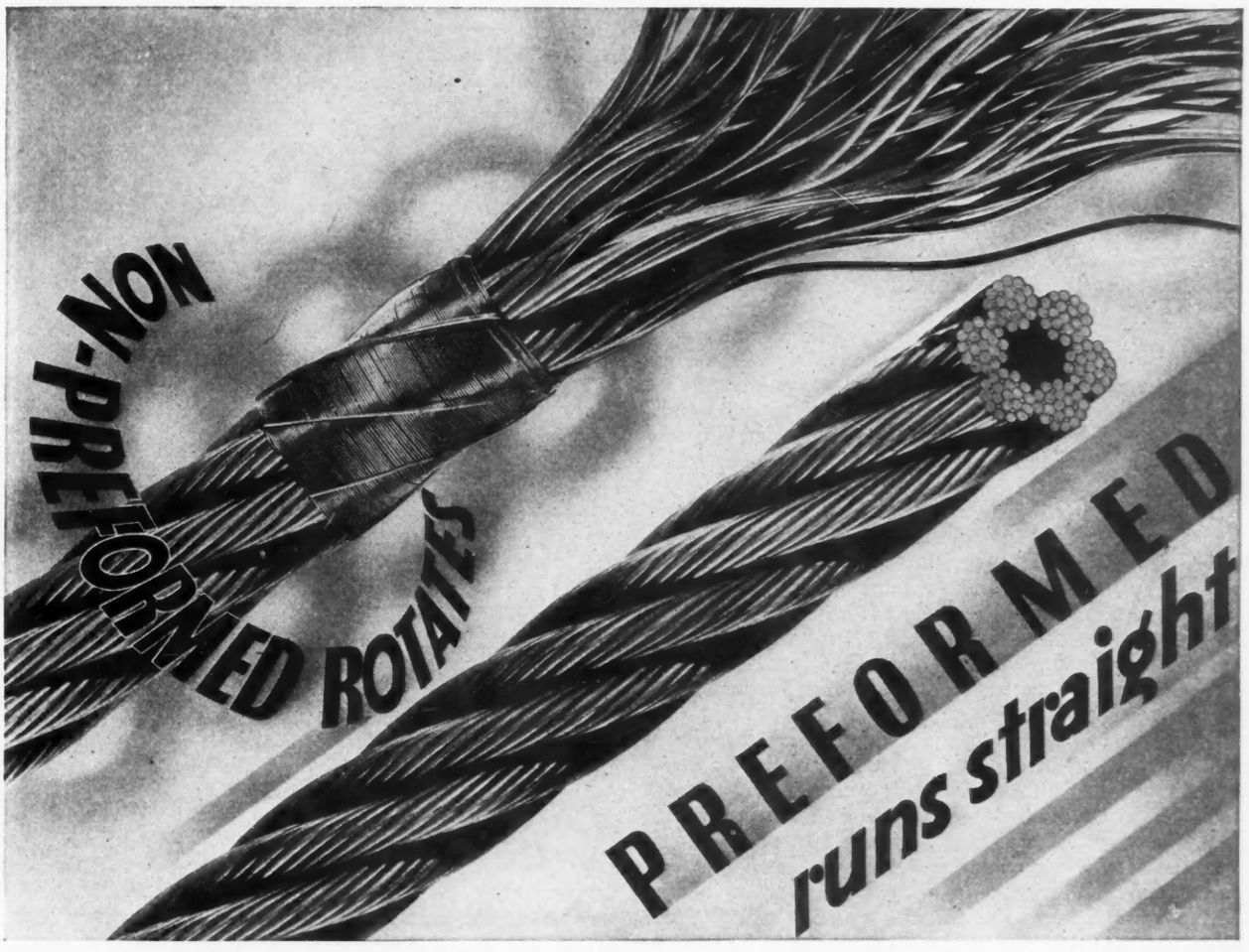
It may be generally stated that the steels are proportionally resistant to average corrosive influences in proportion to the percent of the alloys that are added. Steels with from one percent to six percent of alloys have and are being used for a great many items, however, the higher alloy materials have been confined mostly to the valve assemblies of pumps. These have definitely proved that the majority of corrosive influences encountered in well fluid may be withstood by the use of the higher alloyed steels. Very rarely do we find these materials attacked by the well fluids except in instances where "acidizing" of the well has been performed. Since the majority of these acidizers contain approximately 50 percent of hydrochloric (or muriatic) acid with a small amount of an inhibitor, we have found these stainless fittings to be attacked by this solution. We find that the inhibitor used is designed to protect all metal parts with which the acid comes in contact but they are not always stable in the solution, and where excessive abrasion has occurred the inhibitor does not completely protect the fittings. From this condition we find two predominant conditions, corrosion attack on the fittings and hydrogen embrittlement which usually causes breakage of the parts which obtain heavy impact.

A better understanding of the detrimental effect of corrosion of material subjected to high stresses has been developed during the past three years. Steels that might give satisfactory service under many conditions are not suited to use in corrosive areas where a heavy stress is imposed. Pumping equipment can be obtained in grades suitable for use in corrosive areas, where the embrittling effect of hydrogen sulfide or saline action has given trouble.

The short service life of sucker rods in several sour oil fields increased operating costs and caused operators to seek a reduction in replacements of this item. An analysis of failures showed that corrosion had played the principal role. The fact that rod strings usually parted where only a small pit occurred indicated that most of the trouble was caused from corrosion fatigue, and not from straight corrosion. An examination of a number of rod strings that had failed proved that the rods had been too heavily loaded for use in lifting sour crude oil and water. The rods functioned satisfactorily when new, but the slightest attack from corrosion weakened the rod string and led to serious trouble. Many of the rod strings showed little wear, but a more careful examination of the failure usually revealed a corrosive pit that has encouraged trouble. Rod strings that were not so heavily loaded gave as much as three times the usual service.

When wells were pumped at capacity rates in several fields, the sucker rods gave less than a year of service. The rods of today are of better quality and much more rust-resistant than those used a few years ago. Steels suitable for use in corrosive areas have reduced rod failures to a minimum. Sucker rod manufacturers, however, should encourage operators to reduce the load imposed on rod strings, since corrosion more quickly attacks the overloaded installation.

In a number of fields, larger rod strings are being used to advantage. Where a rod string possesses a high margin of strength, small pits do not cause serious



Select the Rope that Fits Your Job

Preforming individual strands completely relieves tendency of a rope to rotate as it passes over a sheave. Thus one movement causing fatigue is eliminated. Rope life is therefore greatly increased by preforming when bending is the principal destructive force. Preforming, however, adds to cost and does not increase resistance of rope to external abrasion. The extent to which abrasion and fatigue are factors in a particular use must be known in order to determine the economy possibilities of using preformed rope. We will give you the ratio if you tell us your use of wire rope. Writing today may reduce your rope costs.

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trouble. It is in the small and overtaxed rod strings that corrosion fatigue usually occurs. Recent tests showed that a rod string working near its limit soon broke when a small notch was filed to represent a corrosive pit.

A few sour oil fields in West Texas and Kansas yield excessive quantities of hydrogen sulfide and salt water, and corrosion has sharply increased operating costs. Sucker rods have given a great deal of trouble and a few strings had to be replaced in less than 90 days. Operators have been experimenting with various steels and have more than doubled the average service life of rod strings. Rods with a higher strength factor also have given much better service than weaker rod strings. It is in these fields that manufacturers have been able to test the relative resistance of steels to the corrosive action of salt water and hydrogen sulfide. All steels produced in large quantities are subject to attack, but certain combinations are more resistant to corrosion than others.

Embrittlement of sucker rods in fields producing hydrogen sulfide has been observed by operators who were surprised at the lack of resistance of rods that seemed to be in good condition. Rods immediately pulled from a well have been broken by a blow from a hammer or by a "slap" on the derrick floor. The brittleness tends to leave the rod string after it is pulled from the well, however, and it is possible to use the affected rods after a "rest."

Corrosion of well pumps is a much more important problem than is generally recognized. The entire assembly is subject to attack, since the pump nearly always operates near the bottom of the hole and at a level that gives most trouble. Even in many fields where corrosion does not quickly attack tubing, sucker rods and casing, working barrels and pump parts suffer severe pitting that in turn reduces the efficiency of the pump. This pitting of working barrels is the most usual cause of rapid wear of cups or moving pump parts.

In many of the most corrosive areas, balls and seats sometimes fail in less than a week. Failure of balls and seats can cause a very expensive loss of time, although the actual replacement cost may be low. In the hydrogen sulfide areas, balls and seats are subject to embrittlement, and outright failure from this trouble has been recorded after only a few days of service.

Corrosion-resistant alloys have been developed and are widely used for the fabrication of balls and seats. Most of these alloys show an improvement over the old types of steel and brass. A high chrome steel has been especially effective in some of the most corrosive areas of Texas and Kansas.

Balls and seats give trouble from corrosion in Gulf Coast, West Texas and Kansas fields, but other districts show very little corrosion. More than 50 percent of the replacements along the Gulf Coast should be attributed to corrosion, although sand and mechanical troubles often get the blame.

Failure of cups is often caused by microscopic pitting of the working barrel. More severe pitting is common in several areas, and the extent of cup troubles is not generally recognized. All types of pumps are affected in the areas showing only a limited corrosive tendency.

Alloy working barrels are giving good service in the most corrosive districts. Brass barrels give satisfactory service in several fields, but their use sometimes causes rapid electrolytic pitting of the tubing adjacent to them. The comparatively small amount of metal in a working barrel enables the manufacturer to use a more expensive composition than could be used in rod, tubing or casing strings. Pitting that might cause little damage to other equipment may render a working barrel useless. Plated barrels have been used in a few districts.

Corrosion of tubing is experienced in several districts, and particularly in a number of fields in West Texas, Kansas and the Gulf Coast. In all areas affected by corrosion of pumping strings, pitting is chiefly confined to the interior of the tubing. Tubing strings in the average West Texas field are seriously affected by corrosion only near the bottom of the hole. A few of the bottom joints above the mud anchor often corrode and give trouble in a very short time. Accumulation of salt water in the bottom of the hole accounts for corrosion at this level in most of the sour oil producers.

Tubing strings in a number of fields have failed after less than five weeks of steady service, the destructive corrosion usually taking place only on the bottom five or six joints. Pitting and punctures in the lower part of these tubing strings showed that the trouble started on the inside of the tubing. In the sour oil fields of Kansas, tubing corrosion is serious and tubing replacements are very high. In this area, the entire tubing string is affected, but the most serious corrosion is confined to the lower part of the hole. The lower section of the tubing string has been punctured in less than a month in this area.

Tubing corrosion as a problem is increasing rapidly in areas showing water encroachment. Gulf Coast, Arkansas, Kansas and West Texas fields are particularly affected by the presence of water in the bottom of the hole.

Alloys of various metals have been used to advantage in several fields that show a high percentage of hydrogen sulfide.

Corrosion of tubing occurs as much in the non-sulfide fields as in the sulfide fields. Rapid corrosion of tubing is experienced in about half of the Gulf Coast fields, which are largely non-sulfide in the deeper producing formations. In the Goose Creek and Hull, Texas, fields, tubing corrosion has greatly increased pumping costs. No tubing corrosion was experienced in the Hull field until 1927, the appearance of the trouble being attributed to unaccountable changes.

In the Luling, Texas, field, corrosion has caused all kinds of trouble, while in other nearby fields little damage has been reported. Several fields in Southwest Texas produce sour crude oil that causes tubing to corrode rapidly.

In the Smackover, Arkansas, field, wrought iron tubing has shown a much longer service life than the original tubing used. In other fields, high copper-bearing steels have as much as doubled the service life of tubing. Alloy tubing of various kinds have reduced corrosion losses in several fields, Galvanized tubing and other types have proved successful.

Casing has not given as much trouble from corrosion as might be expected, but in fields now producing a high percentage of water the original casing strings are showing signs of leakage. The few casing strings pulled showed heavy corrosion near bottom. The same steels that reduce corrosion losses in tubing should prove equally as effective in the manufacture of casing.

Experiments have shown that moisture must be present in all forms of corrosion. The relative importance of moisture, oxygen and hydrogen sulfide in the corrosion of pipe and other equipment was considered. Oxygen, which is the chief accelerating agent, obviously is present in the water. One serious form of corrosion, such as occurs along the Gulf Coast, does not require the presence of hydrogen sulfide.

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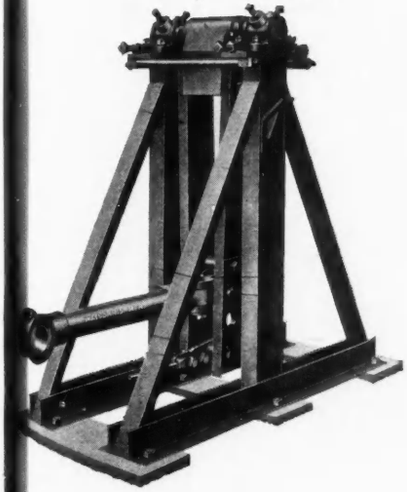
PUMPING EQUIPMENT

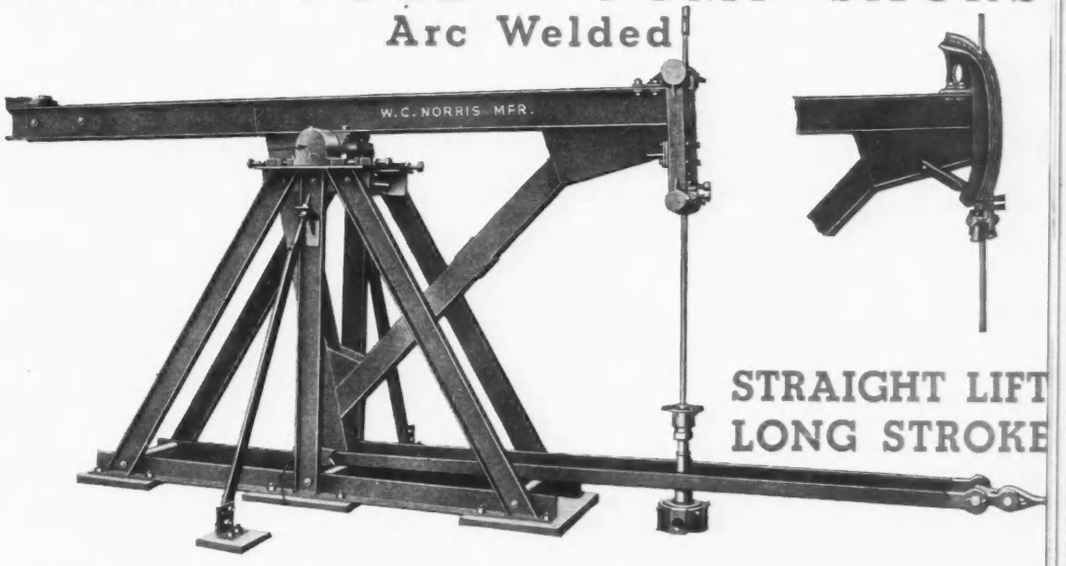
FOR IMMEDIATE DELIVERY

Quality Makes Friends!

HEAVY DUTY Stroke Post



UNDER PULL PUMP JACKS Arc Welded



STRAIGHT LIFT LONG STROKE

The **NORRIS** heavy duty Stroke Post is an economical back side power take-off of extra sturdy construction, with provision for adequate adjustment. All bearings machined, steel bearings are bronze bushed, dust and sand proof and equipped for pressure grease lubrication.

From NORRIS Stuffing Boxes, Polish Rods, Sucker & Pull Rods and Working Barrels NORRIS PUMPING EQUIPMENT includes Horizontal, Link Type and Heavy Duty Swings, Stroke Posts and Hold-Downs . . . everything for the efficient and economical transfer of power to the Jack.

ARC-WELDED Structural steel frame self contained, with welded beam.

CAPACITIES Type 915, 4,500 ft.–2½" Tubing. Type 812, 3,800 ft –2" Tubing Type 610, 2,500 ft.–2" Tubing.

PRESSURE GREASE BEARINGS

BRONZE BUSHED OR PLAIN MACHINED BEARINGS With oil grooves carry lubricant full length of bearings from large oil reserves.

OIL RETAINERS To hold oil and keep rain and dust out

LONG STROKES Adjustable by moving the pull-bar bearing up or down on the plate.

STRAIGHT LIFT Is accomplished through an arrangement of link design Wire Line Horsehead is optional at no additional charge.

ADJUSTMENT of the jack in relation to the well is positively controlled in moving saddle bearings by adjusting screws and by vertical adjustment of diagonal braces by means of their threaded ends.

W. C. NORRIS Pumping Equipment is designed by oil men to get "the job done" efficiently and economically. Large manufacturing capacity assures the ability to supply NORRIS Equipment in any quantity, large stocks conveniently located at our Branches guarantee immediate delivery.

W.C. NORRIS MANUFACTURER, INC

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Surface Equipment Is Subject to Corrosion

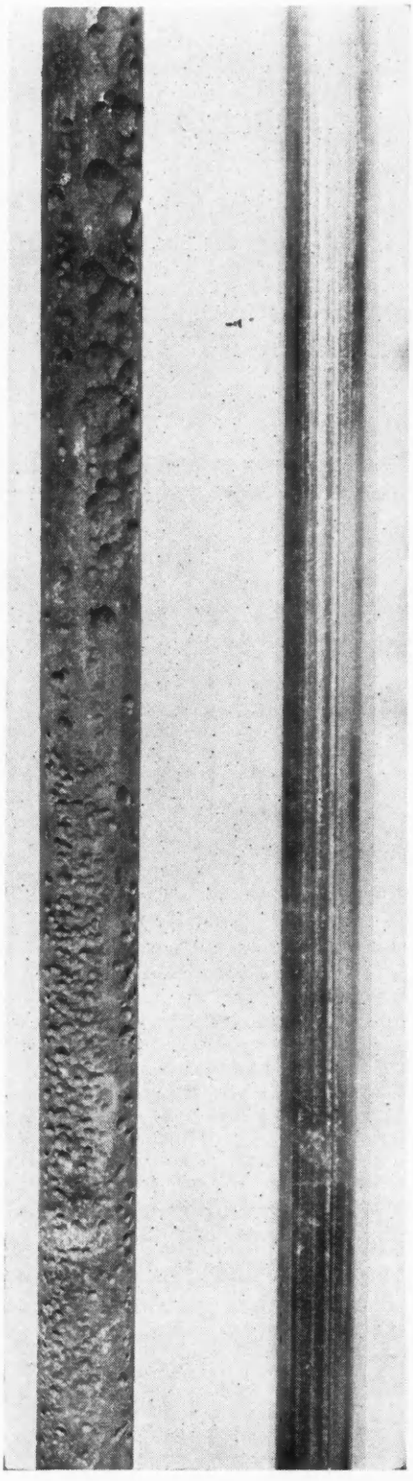
CORROSION in its many forms attacks surface pumping equipment wherever hydrogen sulfide or salt water is present. Its detrimental action above ground has not been so rapid as in wells, and for that reason the protection of surface equipment has been neglected in many areas. Most of the surface equipment does not suffer from undue stresses, and the corrosive action is more natural than in sucker rods and other working parts below the surface. In several non-sulfide fields, corrosion of surface equipment is very rapid.

Polished Rods Susceptible

Polished rods are susceptible to attack from corrosion, and in several districts this piece of equipment has a very short service life. When it is considered that the polished rod carries the heaviest part of the pumping load, and in addition is forced to come in contact with corrosive fluids, its susceptibility to damage from corrosion is obvious. Since corrosion fatigue is a known factor in equipment failure, the polished rod is in direct line for attack.

Ordinary steel polished rods pit quickly in several corrosive areas, and a service life of less than 60 days has been recorded. The pits become so deep and numerous that leakage takes place. The rod often breaks from corrosion fatigue where the pumping load exceeds a safe working margin. In the hydrogen sulfide fields, the rods become very brittle, and breakage has occurred where there had been very little loss of metal from corrosion. This embrittlement is a serious problem in several fields, and all steels are affected by the action.

Alloy steels have proved very resistant to corrosion in several non-sulfide fields. In a number of wells the average service life of polished rods was about 90 days. Use of special alloy steel rods corrected the trouble in every well, and many of the polished rods were in perfect condition after five years service. In the sulfide fields, the alloy steels suffer from embrittlement, although there may be little signs of corrosion. Under extreme conditions the harder steels may suffer more from embrittlement than the milder grades, but some of the hard alloys are resistant to pitting. Where brittle polished rods have been allowed to "rest," much of their toughness has been restored. Operators do not like to re-run such rods in wells that pump with heavy loads, since the full strength never returns after embrittlement.



The steel polish rod on the left was in service only 90 days

The alloy steel rod on the right was in service five years
—Courtesy Stanley Gill

Connections Also Attacked

Valves and other surface connections are affected by corrosion, and frequent replacements are necessary in several districts. Various trimming materials are used to increase the service life of valves. The stems and seat rings are made of carbon steel, special "white" metals, bronze, and stainless steel, any one of the several metals being adapted to use in some particular district. Ordinary stems and seats pit rapidly in the corrosive areas.

Lead lines corrode rapidly, the attack being confined to internal corrosion in some areas. In the sulfide fields and in several areas along the Gulf Coast both internal and external corrosion is common. Lead lines of rust-resistant steels have been used to advantage in a few districts. The ease with which these lines may be replaced has in-

GRAVITY

IS EMINENTLY IMPORTANT TODAY

From the Price Standpoint

No producer can examine the table of crude oil prices at the well today without recognizing the importance of maintaining the gravity of his crude production. The loss of from 0.1°API to 1.0°API in gravity means the loss of from 2c to 5c per barrel for the entire production of a well or group of wells.

When crude production is "cut", even though it is within pipe line requirements, it is always possible by means of Petreco Electromatic Dehydration to restore the loss in gravity that usually results; and at such low cost as to represent a handsome profit on every barrel sold. To illustrate, assume that your production contains 2.5% water and has a wet gravity of 28.8°API, for which the posted price in Field No. 3 is $1.07 per barrel. (See table of crude oil prices at the well.) Dehydration of this crude to 0.8% cut increases the gravity to 29.2° API which is within the next price bracket of $1.12 per barrel—an increase of 5c per barrel for the entire production.

Make gravity tests of your crude frequently and carefully. When the production is "cut" let Petreco engineers determine the results of Petreco Electromatic Dehydration and submit written reports of their findings. This service is rendered without cost or obligation.

CRUDE OIL PRICES AT THE WELL
(May 1, 1936)

Gravity	No. 1 Field	No. 2 Field	No. 3 Field	No. 4 Field	No. 5 Field
20-20.9	.85				.77
21-21.9	.88				.77
22-22.9	.92				.79
23-23.9	.95		.84		.82
24-24.9	.99		.88		.85
Below 25		.86		.78	
25-25.9	1.03	.88	.93	.80	.89
26-26.9	1.06	.90	.98	.82	.92
27-27.9	1.10	.92	1.03	.84	.96
28-28.9	1.14	.94	1.07	.86	.99
Below 29		.94			
29-29.9	1.17	.96	1.12	.88	1.03
30-30.9	1.21	.98	1.17	.90	1.07
31-31.9		1.00	1.22	.92	1.11
32-32.9		1.02	1.27	.94	1.14
33-33.9		1.04	1.32	.96	1.18
34-34.9		1.06	1.37	.98	1.22
35-35.9		1.08	1.42	1.00	1.25
36-36.9		1.10	1.46	1.02	1.29
37-37.9		1.12	1.51	1.04	1.32
38-38.9		1.14	1.56	1.06	1.36
39-39.9		1.16	1.61	1.08	1.40
40-40.9		1.18	1.66	1.10	1.43

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fluenced many operators to use ordinary pipe.

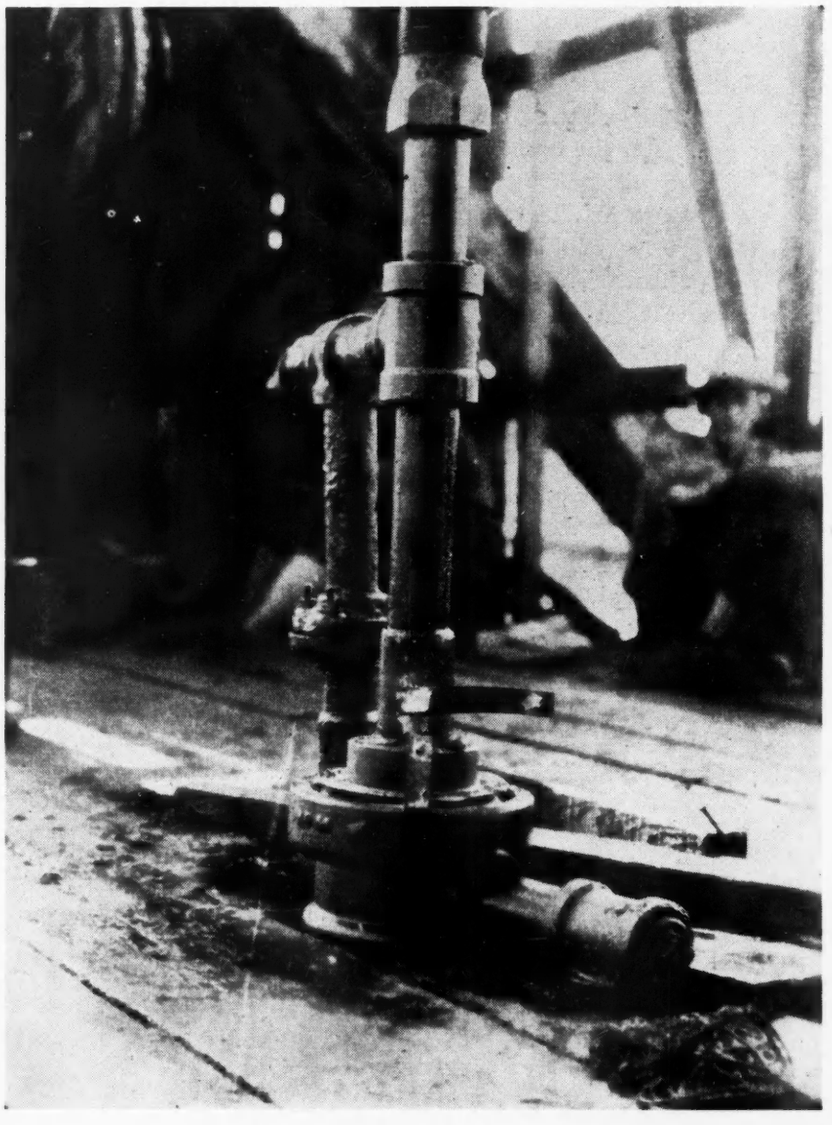
Corrosion of pull rods is a more serious problem than is generally recognized. It was the custom for some time to use rods made of low tensile steels that did not give a high strength factor. Such rods suffered both from corrosion and corrosion fatigue. In the sulfide areas pull rods sometimes become brittle and do not give satisfactory service. In the very damp areas along the Gulf Coast, atmospheric corrosion is a factor in pull rod depreciation. The presence of salt water or salt air accelerates corrosion of pull rods in some of the older fields.

Corrosion of heavy pumping units has been negligible, this type of equipment being rugged and bulky enough to withstand pitting without serious damage. Special paints are used where atmospheric corrosion is a factor. Many operators give special attention to bearings and working parts.

The last few years have witnessed the introduction into the oil fields of some very high grade machinery for pumping operations. These machines include the finest of precision gearing and anti-friction bearings. Most of this machinery is either splash or pressure lubricated, and while operating all parts are thoroughly covered with oil that eliminates corrosion. There are occasions, however, where such machines may remain idle over long periods, and in the hot and humid atmosphere of some of the southern states, moisture is precipitated inside the machines. Conditions of this kind encourage damage from corrosion, and it is advisable that such machinery be turned over frequently, even when not in use, to assure a good covering of lubricants over the parts that might be affected.

Derricks are affected by corrosion in all fields, but serious damage is limited to districts that produce hydrogen sulphide and to fields in the hot and humid areas near salt water. Pitting is severe in several fields, and the strength of a derrick may be greatly reduced by corrosive action. Some signs of embrittlement have been observed in the sulfide fields, but this trouble usually is associated with metal under heavy strain and not to equipment not in motion.

Galvanized derricks have been used to advantage along the Gulf Coast and in the sulfide fields of Kansas and West Texas. Paint has proved a very good protective coating in all fields, and it is especially effective where ordinary atmospheric corrosion is a factor. Gas from certain wells in Crane County, Texas, contains 14 percent hydrogen sulfide, and sulfide concentrations of from five to 10 percent are found in gas in other West Texas fields. Presence of this gas in the air around wells has accelerated corrosion of surface equipment.



Corrosion attacks surface equipment in many areas. Alloy metal well connections are being used to advantage in these districts.

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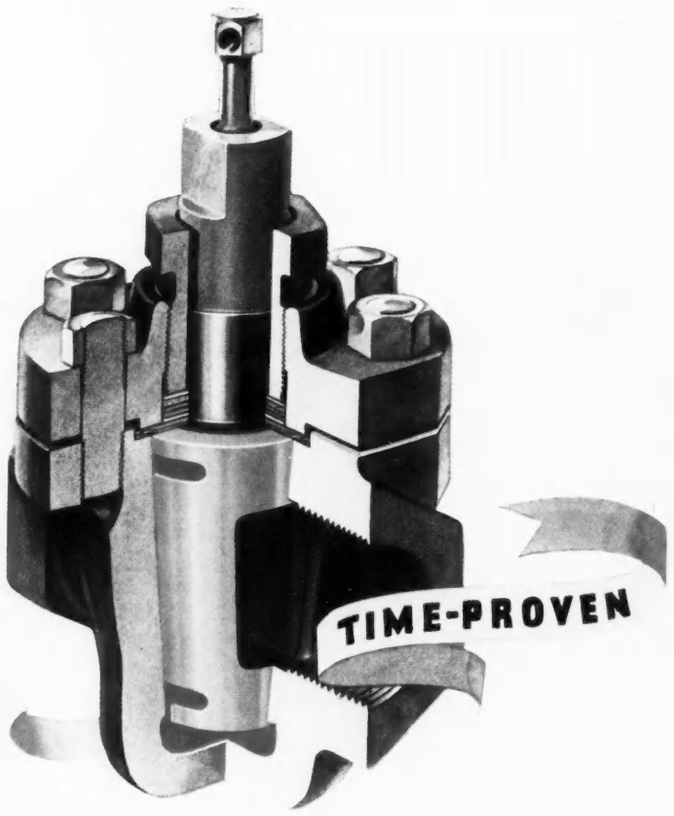

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PRODUCTION METHODS OF EAST TEXAS WELLS ARE A PARTIAL CONTROL OF

Paraffin Deposits

PARAFFIN is one of the most serious pumping problems in many fields, but fortunately its accumulation usually is confined to the upper part of the hole and in surface equipment. The temperature at or near the bottom of the hole in the average pumping well is high enough to keep paraffin in its liquid state. Occasionally a cold streak in a field will accelerate the accumulation of paraffin, particularly in the vicinity of water sands. In many fields paraffin accumulates rapidly in the upper part of the hole, while in other producing areas the rate of deposition is slow but very constant.

Paraffin has given some trouble in the East Texas field, but good production practices have reduced the accumulation to a minimum. Tubing kept full of oil has been least susceptible to paraffin accumulations, and for this reason it is believed that pumping wells, when operated continuously, will be troubled less from paraffin deposits than the average flowing well.

Petroleum engineers and chemists have given much time to a study of the nature of paraffin in oil. It has been found that oil kept in motion at a reasonable temperature will not result in a high percentage of paraffin deposits unless there are definite breaks or "dry" spaces in the fluid flow. It is also necessary for these dry spaces to occur many times at a given place to form a thick deposit of paraffin.

W. T. Doherty and R. C. Buchan determined about four years ago that paraffin does not precipitate principally from the body of the oil. The bulk of the deposition or sedimentation takes place after the gases and lighter fractions evaporate or leave the oil. This discovery accounts for the heavy accumulation of paraffin in old fields that show little gas. This holds as true in the case of accumulations in the tubing as in surface equipment.

Water Horizon Influences

In the north end of the East Texas field, paraffin accumulation is greatest near the level of an upper cold shale and water streak. Since the average tubing string holds about 20 barrels, a large percentage of the daily allowable is cold oil, a part of which had an opportunity to congeal and give off its light fractions. Paraffin has accumulated less in wells that are pumped the greater part of 24 hours than in the better wells that are pumped only a few hours each day. Oil kept in motion in the tubing gives little trouble.

A number of operators having weak flowing wells are studying the action of these producers in order that they may lessen the paraffin problem when the wells are placed on the pump. The flowing of these wells has proved that full tubing causes less trouble than a tubing string that is intermittently full and empty, or that is dried and flushed by a heading and surging well action.

An oil-water emulsion definitely increases the accumulation of paraffin under conditions that would cause little paraffin to form otherwise. A great deal of free paraffin seems to find its way into this emulsion, which contains a much smaller percentage of light fractions than clean oil, and possesses a less cleansing action than water.

Water in pumping wells usually affects accumulation of paraffin in the tubing and in well connections. Free water produced with the oil, particularly water having a temperature of more than 90°F., minimizes the deposition of paraffin. A number of wells producing as high as 10 and 20 percent water have not been troubled much with paraffin. Water allowed to cool in the upper part of the tubing has accelerated the accumulation of paraffin in many wells.

Removal of Deposits

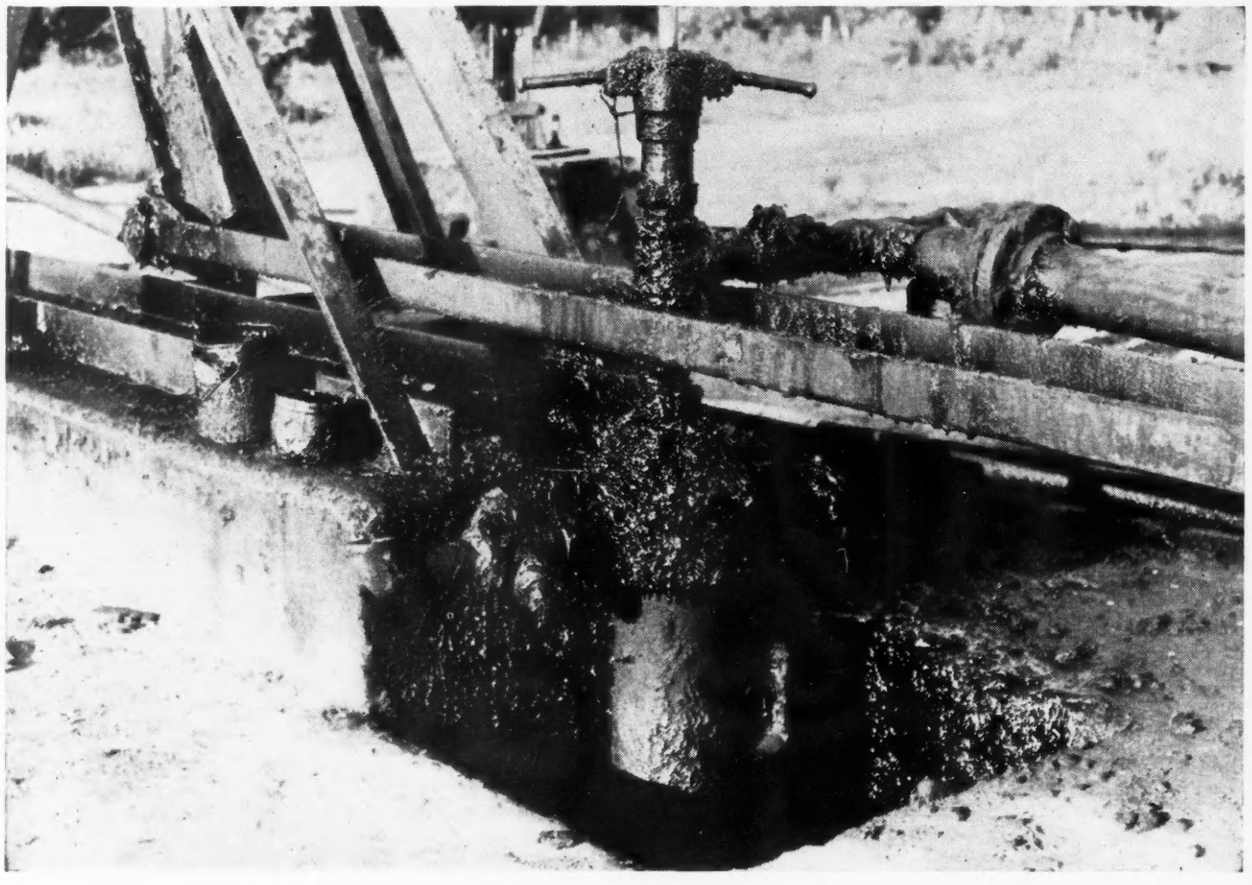
Paraffin accumulations have been removed from the tubing in many ways in East Texas wells. A small set of tools, somewhat similar to cable drilling tools, has been used to advantage in several parts of the field. The outfit consists principally of a small wire line, wire line socket, weight or sinker bar and scraper. Several companies have used scrapers of original design, but their general shape and function are identical. It is often more difficult to remove paraffin from tubing in pumping wells than in flowing wells.

One company using the small cable tool set has designed a circular scraper for use in the bottom of the assembly. Diameter of the scraper used in 2½-inch tubing is 2¼ inches. Essentially it is a round knife supported by two fingers, and occupies the same position in the outfit as a bit in a cable tool set. The tools run from a reel, the power being furnished by the automobile carrying the reel and surface equipment. The automobile is jacked up and connection to the reel made with V-belt and pulley.

Chemicals and less potent liquids, such as gas-oil, have been used with beneficial results. The usual procedure is to dump the chemicals into the tubing and to follow a few hours later with small tools or a swab.

A small amount of chemicals has been dumped daily into the tubing in a number of East Texas wells. This practice has proved more effective than use of chemicals after the paraffin accumulation has stopped or seriously retarded the tubing flow. Some chemicals also have checked formation of paraffin in well connections and surface equipment, operators report.

A number of paraffin solvents have proved very effective in removing paraffin in tubing. Most of these solvents have an acid base, but other ingredients are added



Paraffin causes considerable trouble in parts of the East Texas field. Surface equipment is affected more than underground machinery.

to the formula to increase its effectiveness. Solvents of this type will be used extensively in pumping wells in the East Texas field.

A combination chemical and mechanical cleaning method has been used in some parts of the field, the chemicals being used to loosen the paraffin, and special tools to break it up and induce it to come to the surface with the oil.

Steam has not been used with outstanding success in any part of the field, but it has been effective in removing paraffin accumulations from well connections. It has been difficult to get live steam to the seat of the trouble, where the tubing has carried a heavy deposit of paraffin.

Since the paraffin has been confined to the top 1500 feet of hole, operators have found it less expensive to clean the tubing often than to await more definite signs of trouble. The trouble runs in belts, the north part of the field showing the effects of the acccumulation more than other sections.

Paraffin causes more trouble on the surface than in the tubing string, but it is much easier to handle these accumulations than those a considerable distance below the surface. In many pumping wells paraffin gives little trouble below 1000 feet from the surface. A cold shale and water streak below 1000 feet in the north end of the field has helped to extend the paraffin accumulation downward in many wells, but in other parts of the field only the top 500 feet is affected. The accumulation in the tubing is not uniform and may be slightly greater 500 feet from the surface than nearer the top of the hole.

In the Mexia-Corsicana district tubing is pulled and steamed at small expense. The paraffin melts at a low temperature, and it has been found as economical to pull the rods and tubing as to use a chemical or mechanical cleaning method. Chemical solvent has been successfully used here, however.

C. E. Reistle has made some very interesting observations in the East Texas field. He has found that pumping wells produced largely by "agitation" are affected more by paraffin than other types of pumping wells. In wells of this type the oil contains gas in solution when it enters the lower end of the tubing. As the oil approaches the surface, the pressure is reduced and sufficient gas may be liberated from solution to cause a part of the oil to flow from the tubing. Under such conditions a part or all of the tubing is periodically emptied, leaving only a film of oil on the surface of the pipe until a fresh supply of oil either flows or is pumped into the tubing.

Very little paraffin accumulates in the average East Texas pumping wells where gas anchors are used, and the gas is taken from the well through casing. It is believed that most pumping wells can be operated without encountering serious paraffin troubles, provided the proper precautions are taken.

Natural gasoline and cracked gas-oil are good solvents for paraffin. The usual practice is to inject several barrels of the solvent into the casing, where it will drop to the bottom of the well and increase the solvent power of the crude oil, which in turn dissolves the accumulated paraffin in the tubing.

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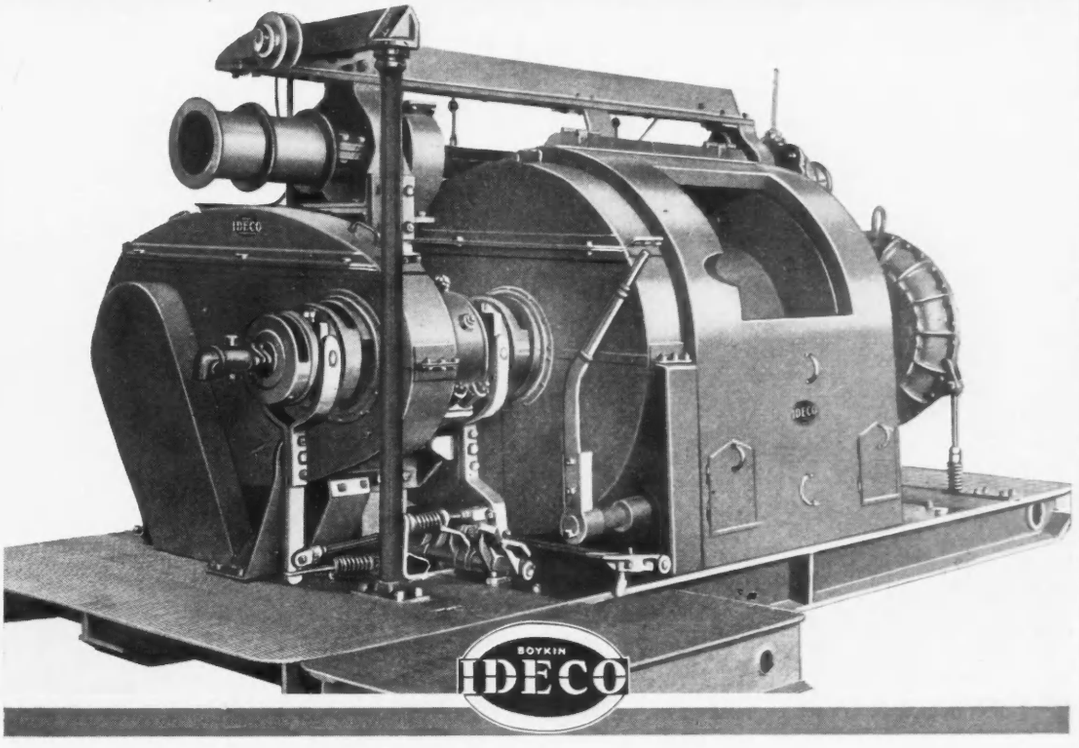

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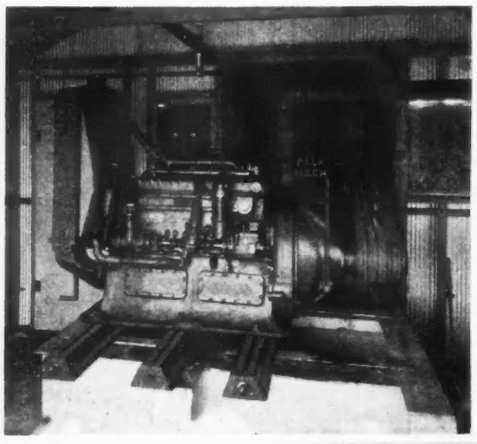
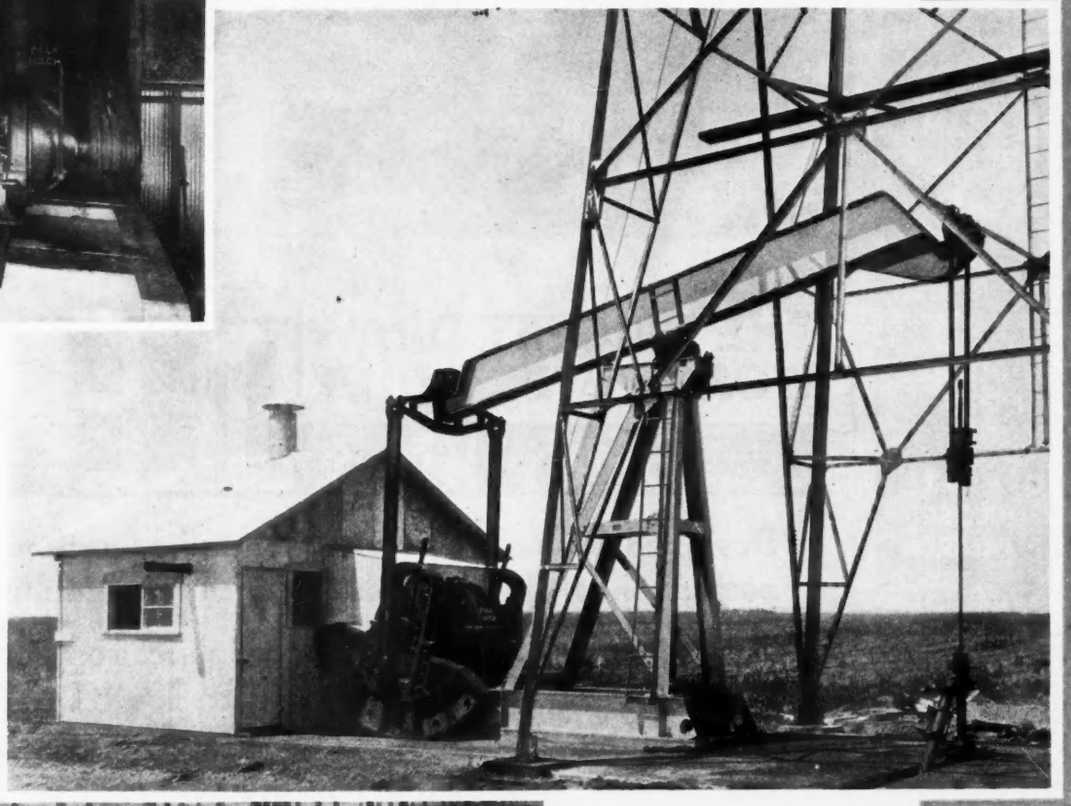
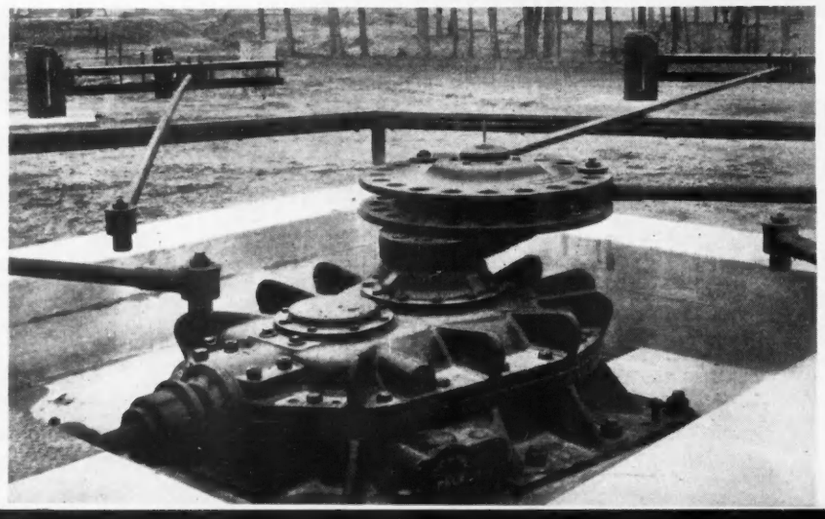
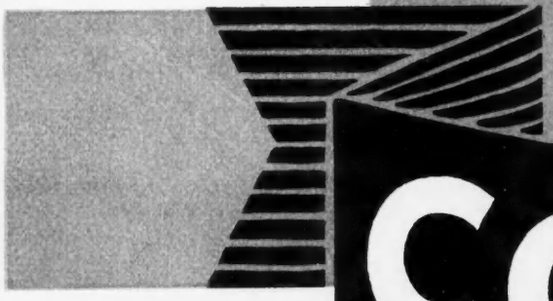


ABOVE: Showing Drive End of 24LT-112CH Geared Pumping Unit.



RIGHT: Installation of 24LT-112CH Geared Pumping Unit (Twin Crank) in Kansas.

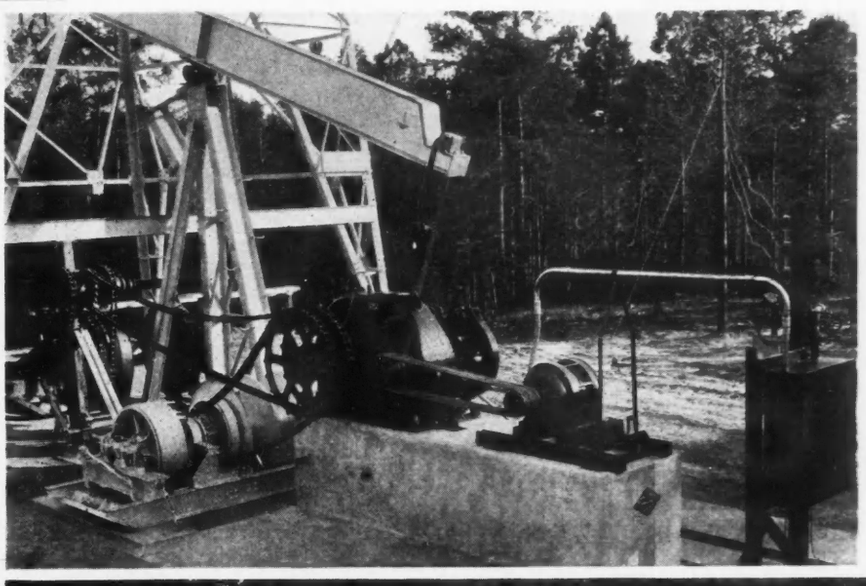




LEFT: Pit setting of 125 CGP Geared Power in East Texas.

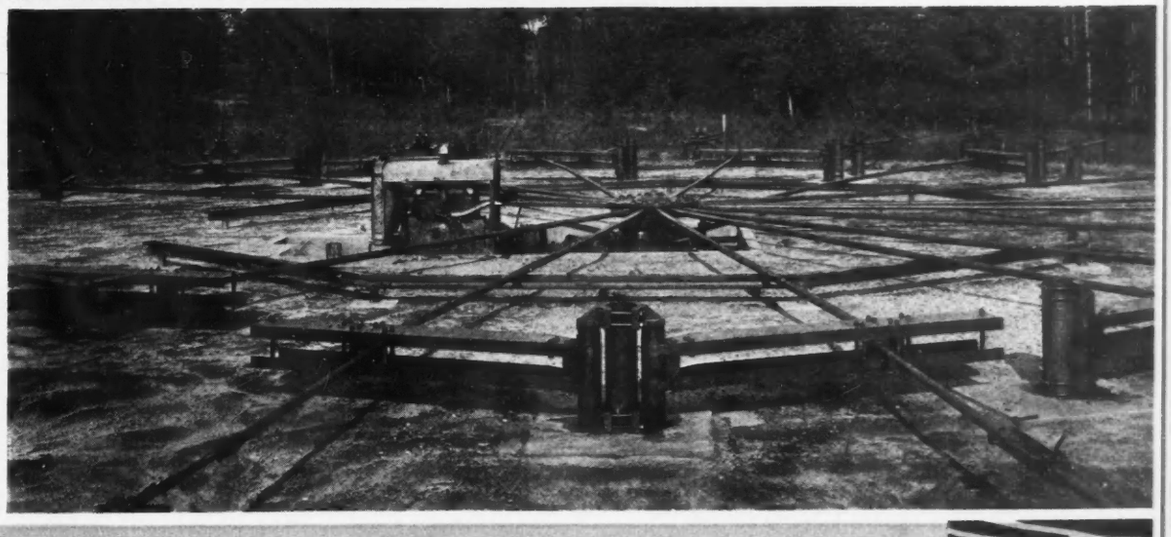
ABOVE: 12JT-60 CD Geared Pumping Unit. Twin Crank.

7½ MDO Unit Pumper.



LEFT: Installation of 11 MDS Stationary Pumping Unit in East Texas.

BELOW: Installation showing 125 CGP Geared Power in East Texas driven by N4B Climax Engine.



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Care and Maintenance of Sucker Rods

CAREFUL handling of sucker rods is of the utmost importance for obtaining the greatest sucker rod life. There is a major factor which makes it necessary to maintain such extreme care. In view of limitations of the diameter of the rods and couplings, which will operate in the desired sizes of tubing, it is essential that the rod diameter be held as small as possible to allow ample fluid passage through the tubing. There also are limits to the amount of rod stretch that may be allowed and still maintain proper plunger travel—too the amount of power available to reciprocate the rod string and plunger.

Due to these limitations it is impossible to allow the correct factors of safety which are considered good engineering practice. The factors of safety for steel operating under such conditions, as sucker rods, should be from 8 to 12. By this it is meant that the rods should not be stressed over one-eighth of their tensile strength under repeated variation of loads from zero to the maximum. In the event that impacts, such as are occasioned by certain factors—namely, irregular pumping movements and pounding for fluid—the factor of safety should be twelve or one-twelfth of the tensile strength of the rod. As previously stated, it is essential to disregard that which is considered good engineering practice or it will be required that rods as much as two or three inches in diameter be used in some of the deeper wells. Consequently, it is common practice to use a safety factor of three or four even under conditions where stress ranges are high and accompanied by impacts.

The steel mills and manufacturers alike, realizing this condition, must hold the analysis and physical characteristics to very close ranges. The fabricating procedures require extreme accuracy and care to insure consistently uniform sucker rods. It is due to this care that it is possible to operate successfully with the low safety factor required.

Successful rod service may be expected only where the rods have no permanent deformation or surface imperfections. Even with the afore-mentioned low factor of safety, it is rare to find breakage of sucker rods due directly to overloading, except where the pump plunger, the hold-down unit, or the standing valve has stuck and the rods have been broken by pulling too hard to free them. These breaks are detected easily as a decided necking down or reduced cross section develops at the point where breakage occurs. This reduced section will be noted around the entire surface of the rod.

The most predominant type of breaks is the progressive fatigue failure. An extensive investigation reveals that 75 percent of these progressive type failures are due to carelessness in handling the rods after they have been fabricated and irregular surface equipment and operations. Less than one percent is caused by improper fabricating processes; the remainder caused by corrosion pitting.

To produce a progressive type of failure it is necessary that at some point on the rod, permanent deformation must have taken place. This may be caused from small nicks, excessive bending to a point wherein the rod does not return to its original shape or by corrosion attack. At these points of deformation, concentration of stress begins. Consequently, the rods practically tear apart leaving little or no reduced cross section at the point of breakage.

Since these extensive investigations do reveal that the majority of rod breaks are not caused by overloading, it is obvious that more extreme care should be taken to prevent any permanent deformation of the rod string through careless handling. This is especially true since the factors of safety used are extremely low by comparison with other steel products. If the following instructions are religiously adhered to you could rest assured that the majority of sucker rod breakage would be overcome.

Transportation of Rods

In loading rods, rope slings or other suitable means should be used when lifting the bundles.

Use sufficiently large bodied trucks so that sucker rods may be properly supported, thus allowing the rods to lay straight.

Support rods on wooden blocks.

To unload rods, lift them off the truck and lay them down, never drop them.

Place them on plain platforms or closely spaced wooden blocks that will keep them out of the dirt and avoid sagging.

Never unload rods where they might be run over by trucks, walked over, or have heavy equipment dropped on them.

Storage of Rods

Store rods in bundles as received from manufacturer leaving in bundles until ready to run.

Thread protectors must not be removed until rods are made up.

Protect rods from weather to prevent rusting.

Pulling and Running Rods

Be very careful when removing the tie-wires on the bundles, use only pliers.

Never cut or break wires with an axe or hammer as damage is occasioned on the rods when this is done.

Make sure that coupling and pin threads are thoroughly cleaned before making up joints to eliminate subsequent trouble.

Use thread cleaning tools for this purpose, then

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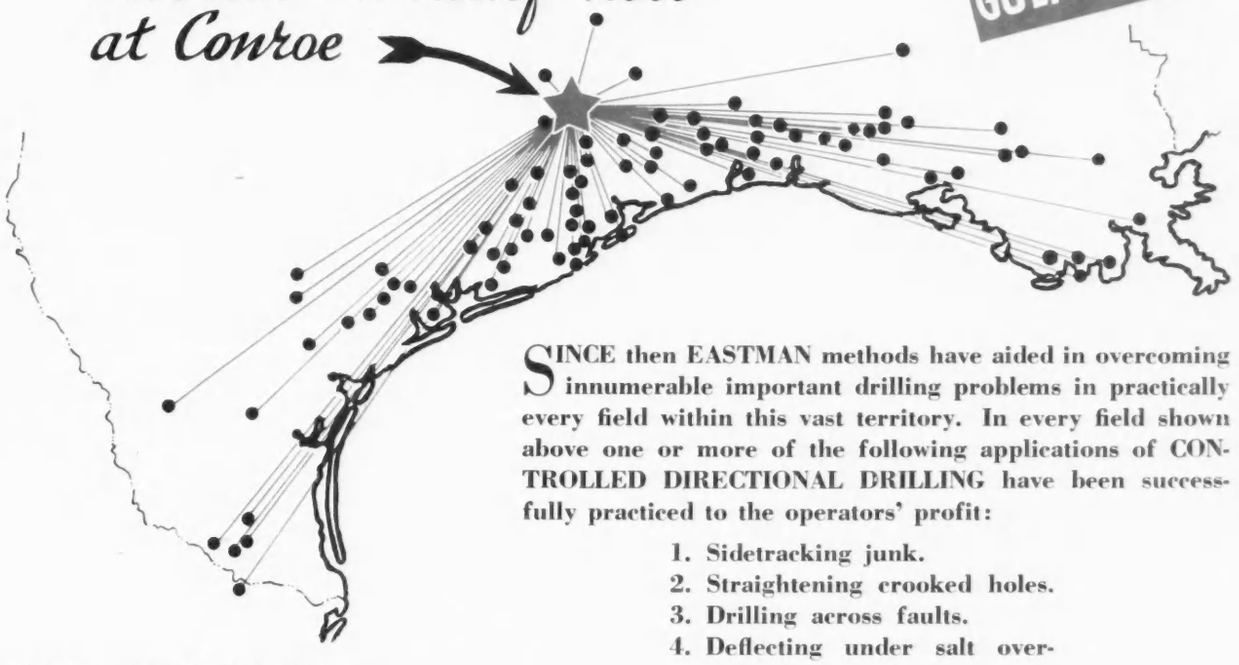

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brush with distillate if necessary. Be sure the derrick girt is slotted as the rods are laid down from pulling so that it will not be necessary to bow the rods excessively to lay them down.

Keep the slack out of the rods while stabbing to prevent cross threading.

In making up joints be sure they shoulder.

Do not put excessive strain on couplings should they not shoulder properly as the boxes may be expanded by forcing the joints together.

Hammering couplings to break joints is very harmful and should never be done.

When running the rods in the hole do not run them in too quickly as the forged ends of the rods may be damaged by hitting the guide too sharply.

Excessive pulling to free a sticking plunger, standing valve or hold-down attachment permanently injures the rod even though it doesn't break them. Better pull the tubing than ruin a string of rods.

Never attempt to straighten bent rods by screwing them into place, picking up the string hanging in the hole and straightening the bend or kink by hammering on the outside curve of the bend with a wrench on any other handy tool. It is advisable to fish out the whole string of rods, inspecting each carefully before running back in.

Pumping of Wells

Pump wells no faster than is necessary to get the production. Wells pumped to pound fluid give no more production and create many hazards to the sucker rods. Long slow strokes are easier on the rods than a short fast one.

Use the smallest size pump that will give the production. Large pumps mean heavy loads for rods.

Keep rigs in good repair to avoid bumping and jerking which are hard on the rods.

Use proper combination rod strings.

Use the loosest fit that will pump the fluid. Tight plunger not only increases the rod load on the upstroke but causes breaking and buckling of rods on down stroke. Provide adequate counterbalance and avoid pumping with a drilling motion.

Use sufficient rod guides in crooked holes to relieve undue wear on the rod body.

Anchor tubing to secure the greatest production from the fewest number of strokes.

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THE OIL WEEKLY

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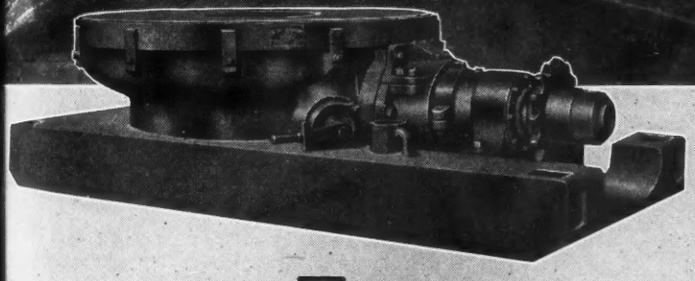

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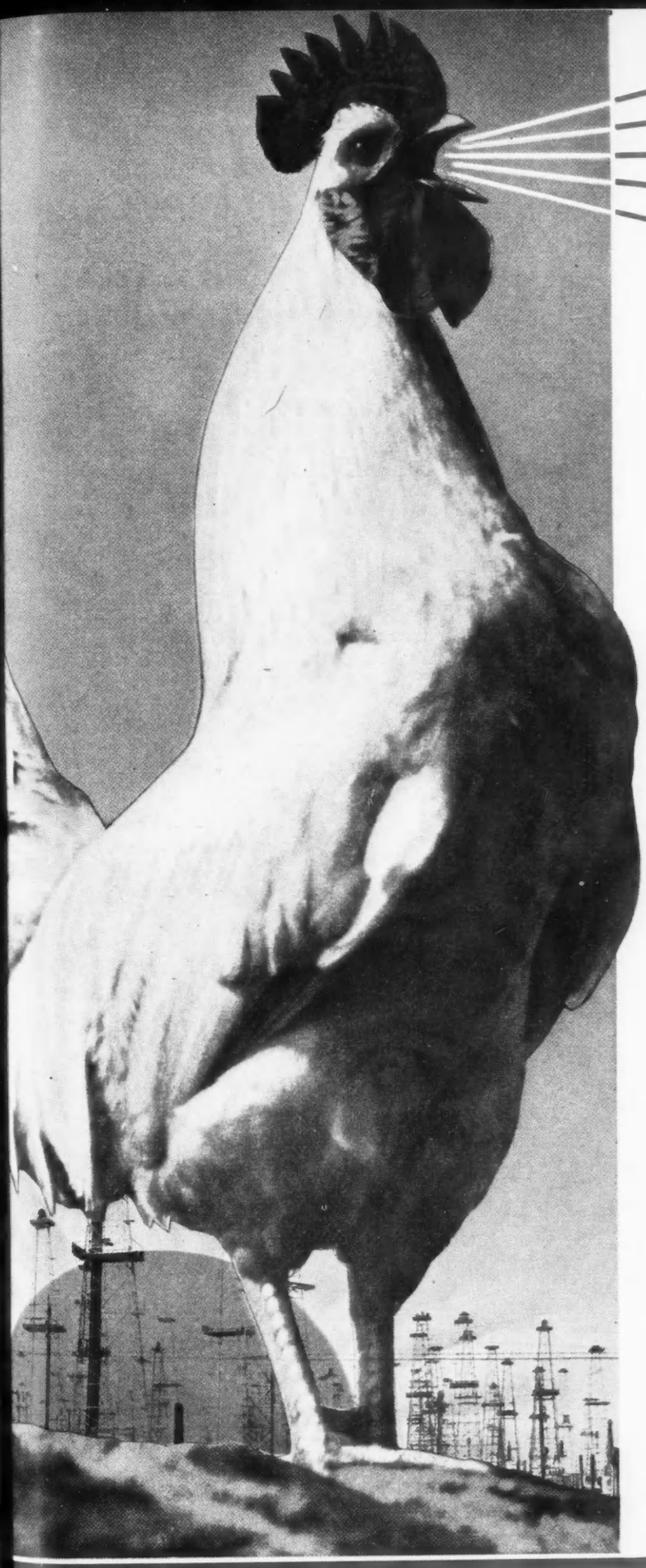

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Safe Pumping Work

A FEW SIMPLE CORRECT PRACTICES AND RULES WILL PAY DIVIDENDS

MEN employed in performing pumping operations in oil fields have an important job. Usually their duties are numerous and may vary somewhat from day to day. It is not only desirable that such workers understand first aid so they may render intelligent aid in case of injuries, but they also should be trained to avoid and eliminate situations that may cause accidents. The latter is a logical way to avoid accidents, and it is up to the men themselves to minimize such possibilities by eliminating bad working conditions and by learning correct working practices and following them. The American Petroleum Institute Committee on Accident Prevention in Production recently has published Manuel No. 9, which discusses many of these factors.

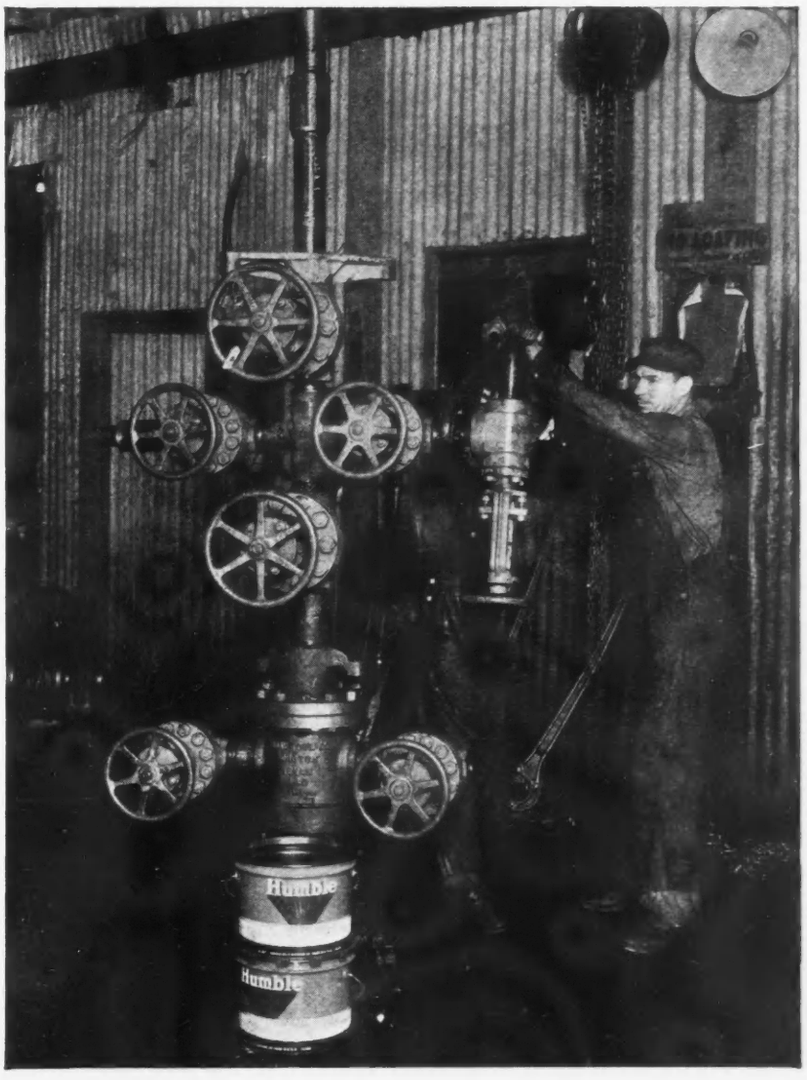
One of the first things in applying safety first to working conditions on producing leases is to employ good housekeeping. In other words, all derrick and pumping house floors should be kept clean and free from obstructions and waste oil. Oily rags and waste should be placed in a metal container and disposed of at regular intervals. Nail heads should be driven flush with the floor to eliminate stumbling conditions. Tools should be kept clean and in good repair, as the use of unsafe tools is hazardous.

It is natural that the various prime movers should offer one of the most likely dangers. It is essential that all moving parts, such as flywheels, belts, etc.; should be covered with protective guards to prevent laborers from coming in contact with them.

There are a number of simple but important working rules that should be applied by every oil field worker when around prime movers.

Every gas engine should be stopped and the igniter wire disconnected and grounded before any adjustments to the clutch or any other working parts are

This practice is unsafe unless the igniter wire has been detached from the spark plug or the spark plug has been removed



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made. If the igniter is tripped without grounding, the insulation may be burned through and the wire shorted. If work is to be done on the engine the safest precaution is to remove the spark plug, as this makes is impossible for the engine to start if the igniter is tripped.

Since gas engine clutches cannot be depended upon to stay in neutral, the engine should be shut down before work is done on any of the moving parts. Moreover, the worker should stand in such a position that if a "kick back" does occur he will not be hit by the clutch lever.

Clutch arms should have plenty of clearance, and a guard rail should be placed around the location of clutches where possible.

In starting gas engines forward, the flywheel should be turned forward until the piston is on compression, just a little past center. It is a good practice to mark the spoke that the engine fires on. After setting the throttle for starting, the ignition should be be turned on. The correct procedure then is for the operator to step to the front of the flywheel, place toe of left foot on spoke, kick and pull down, keeping his right hand on the rim to steady himself and prevent falling into the wheel. To turn the flywheel backwards, he should step to the back edge of the flywheel, place the toe of the right foot on the spoke easiest to reach, place the right hand on the spoke, kick and pull down. Under no condition should an operator climb the flywheel or follow through with his arms when pulling on the wheel. If he cannot obtain sufficient momentum with this toe and arm, he should get help. The floor around flywheels should be kept dry so the floor will not be slippery, and it is wise not to wear rubber boots, composition sole shoes or rubbers while doing this operation.

To stop a gas engine, the gas should first be turned off, then the ignition. The ignition cable should never be pulled from the spark plug while the engine is running as a spark may be caused that may result in damaging and injurious fires.

The same precautions that apply to gas engines are also applicable to oil and gasoline engines. However, each of the latter have several hazards that are peculiar to their type.

In the case of oil engines, the high pressures at which they operate must be taken into consideration. The hot bulb or tube should not be inspected by looking down in the top of the chimney around the bulb, but through the air intake at the bottom of the chimney, or through a small looking glass that may be held above the chimney. However, it is seldom necessary to look at the hot tube while the engine is running.

In cranking gasoline engines, the igniter spark control should be placed in the retarded position. The crank should be grasped with the thumb extended along the forefinger and the crank pulled up and disengaged at the top of the pull.

In shutting down or starting an electric motor at the main switch, it is wise to stand on an insulating mat in front of the switch. This way it is impossible for an electric current to pass from the switch through the body of the operator to the ground should there be a short. When starting to handle electric equipment, the operator should first use the back of his hand to touch the switch box, switch handle or motor frame. Should the equipment be "hot" due to a short or insulation failure, the shock caused by the contact with the back of the hand will cause a contraction of the muscles of the hand, which will draw the hand away from the "hot" equipment instead of causing the operator to grip it as occurs when the palm of the hand is used.

To stop an electric motor, the controller should be turned to the "off" position, the oil switch tripped and the main switch opened. This turns all current off and the equipment can be worked on safely. When starting, the main switch should be closed first, the oil switch next, and last, the motor starting switch or controller. It is important that this routine be followed, so that the switch will not be burned.

With all belt-driven pumping equipment, correct tension should be maintained on the belts to prevent slipping. The belt should be run just as loose as possible without slipping. No one should crawl under the band wheel or belt when it is in motion. When belt dressing is used it should be applied at a point well away from the pulleys so that the hand cannot be drawn into the pulley.

While the newer and more modern type of central power hook-offs protect the hands of workers to a much greater degree than do the older types, it is well to keep the hands in the clear of any position that might "bite" when disconnecting or connecting up a rod line.

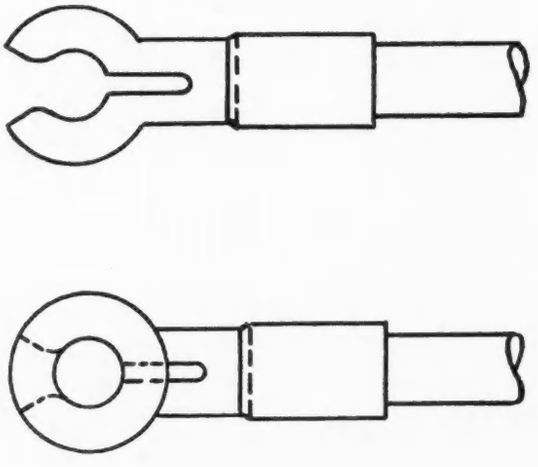
To pick up rod lines, a hand jack, a tractor, or other approved facilities should be used. If it is necessary to step over or crawl under a rod line, the worker should watch the pull of the line and proceed on the down stroke of the well, as lines usually break on the lifting stroke.

The worker should keep in the clear when inspecting or greasing swings and weight boxes. To do this, the worker may take position on the outside of the swings and in front of weight boxes.

In "feeling the lift" on a well, the hand should be placed above the polish rod clamp, then if the rod line breaks, the hands will not be caught between the clamp and the stuffing box.

A man's greatest hazard is usually himself. If he will learn correct working practices and follow them, he probably will be a safe worker.

Igniter wire with a washer soldered to the terminal so it cannot be jerked off spark plug in the presence of gas.



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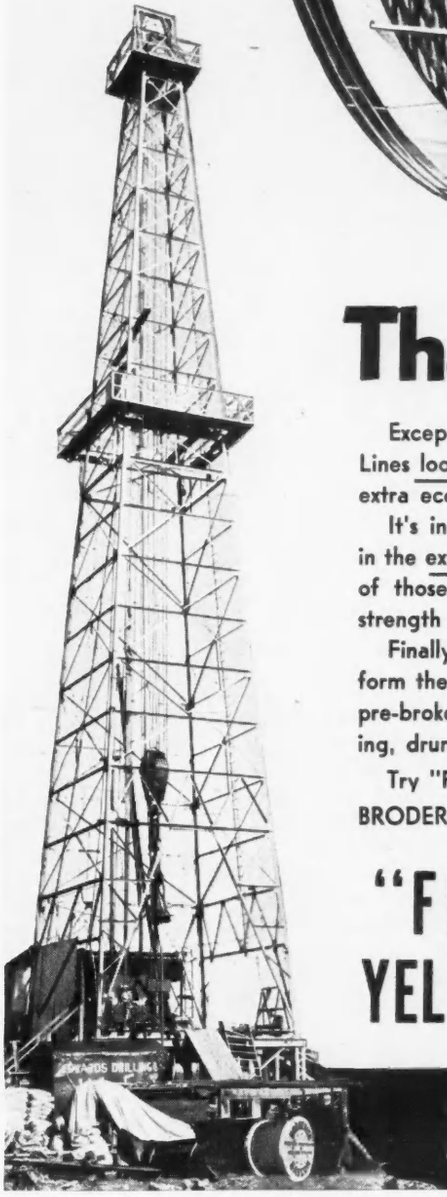

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OPERATORS AT LULING HAVE FOUND MANY GOOD METHODS FOR

Combatting Corrosion

By EARL S. POST, Staff Writer

CORROSION, one of the worst hindrances to the production of crude oil, has provided many difficulties for operators in the general Luling district, comprising both Guadalupe and Caldwell counties. Many experiments have been resorted to in an effort to overcome these elements.

While not wholly successful, the experiments have brought to light a number of new and interesting methods of operation. Some of these should lead to the solution of these hazards.

The most outstanding conclusion is that corrosion can be materially reduced if the fluid is kept airtight. The moment the oil, water and gas become mixed with air or outside water, oxidation apparently sets in, thus damaging the metal with which the fluid comes in contact.

The flow lines, casing heads and above ground pumping equipment are closely guarded to prevent holes. The moment a piece of equipment springs a leak, corrosion sets in, and shortly the equipment becomes badly eaten and generally not usable.

In many cases where flow lines and other equipment generally buried have been placed above the ground so that they can be watched, they will not become pitted and leak. Tubing, rods, etc., wear fairly well in the hole if they are not subjected to foreign water or air. In cases wherein casing heads are left open, air is pulled into the hole, thus causing corrosion in the equipment in the hole.

Magnolia Petroleum Company has partly overcome the trouble it has encountered through casing leaks in producers in the old Luling field through a revised cementing process. There are water sands ranging from 200 to 1000 feet in this field, the water containing some minerals. Many of these wells are 14 to 15 years old, and during that length of time this shallow water has caused breaks in the casing, the water running into hole and mixing with the fluid from the oil bearing stratum.

Surveys are run into the hole to determine the point at which the casing is leaking. Just below this level a cementing plug is set. The well is cemented in the usual manner, the upper plug being pumped to within a short distance of the bottom plug. The cement is forced into the formation through these holes, filling the formation as well as any open space around the casing. The estimated intrusion of water, quantity of casing believed to be damaged, etc., are bases for figuring the quantity of cement to be used. Sometimes it is necessary to resort to two or three cementing jobs to finally complete the cutoff.

These wells frequently produce as much as 10 to 20 times as much water as oil. The intrusion of water from an upper level further increases this ratio. It is not, however, the increased amount of water that causes the trouble as it is mixture of the water from the two levels. Certain chemicals in one react with the other, causing increased corrosion in the hole.

One lease superintendent pointed out that when tubing, and other producing equipment, was removed from the hole after having been in use for a considerable length of time it was in fairly good condition. The several hours the equipment was out of the hole allowed the air to cause a chemical reaction which ultimately resulted in considerable damage. Balls and seats, valves, etc., in the pumping equipment have to be replaced frequently when the combination of the fluid, gas and air are allowed to do their damaging work.

The result is that efforts in many cases are made to keep as much of the equipment air tight as possible. As soon as a minor leak develops in flow lines, nipples, etc., deterioration sets in and it is only a matter of days until the holes are unusually large.

Flow lines may withstand corrosion for years due to being kept air sealed, but the nipples on the end of the flow line where the oil empties into the tank rapidly eat away due to the mixture of elements.

During the more recent years efforts have been made to control the corrosion in tankage, especially gun barrels. The highly corrosive gas in this oil eats large holes in the tanks within a short time. In some cases, an asbestos type of cementing material has been used to coat the inside of the tanks, thus materially reducing corrosion. Another method of reworking the gun barrels has been to install galvanized wrought iron staves, this work meeting with some success.

Due to damage done to tanks through corrosion, considerable work has been done in rehabilitation of storage. One plan has been to reconstruct the decks by using lumber. This is done with a cheap one by 12 inch tongue and groove or lap type of lumber. The lumber is fitted over the deck of the tank as tightly as possible and nailed to lumber braces. The lumber is covered with regular tar roofing paper, or similar material. A wood band is nailed around the upper rim of the tank to prevent rain from getting beween the lumber and the roofing material. The usual openings are constructed to make the tanks useable.

Several companies in the Luling and Salt Flats fields have had the upper portions of their 500-barrel tanks greatly damaged through corrosion. With the decline of production in the field, the large tank batteries have not been entirely necessary. As a result, the 500-barrel tanks have been cut to one-half their height and wood decks constructed. The damaged portions of the tanks therefore were removed and good 250-barrel tanks have resulted.

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East Texas Pumping Status

FURTHER PRODUCTION CUTS IMPOSSIBLE WHICH SHOULD INCREASE WELLS ON LIFT

By H. H. KING, Staff Writer

PERIODICAL slashes given allowable production of the East Texas field by the Railroad Commission in order to absorb new completions without hiking the aggregate daily withdrawals of crude have materially prolonged the flowing life of wells that have been bordering on the pumping stage for months. These production restrictions have likewise retarded the spread of salt water, which underlies approximately 65,000 of the 130,000 acres now included within the productive limits of the giant structure.

The commission has about run its course in aiding the low-pressure wells and areas that are subject to water intrusion by cutting back production to offset new completions, as the field is now prorated to 20.56 barrels daily average per well. The state's marginal well law does not permit wells within the East Texas depth class to be restricted below 20 barrels daily. On July 1 the East Texas field was credited with 20,855 oil wells sharing in an allowable of 428,810 barrels daily, and 75.8 percent of the total wells were prorated to minimum level prescribed by the statutes. The commission must retain a reasonable margin of production between the most prolific wells in the field and those that have declined to the stripper well stage, otherwise its proration rules become vulnerable to court attack.

Drilling Still High

The East Texas field added 1348 producing wells during the first six months in 1936, or an average of seven new wells daily. Currently the field is maintaining this average, and projected drilling indicates that this rate of development may continue for some months hence. The commission has not attempted to restrict the drilling of unnecessary wells on thickly populated leases in proportion to its efforts to hold down the aggregate allowable of the field.

Each reduction in the allowable assigned the field since the first of the year was recommended by engineers of the commission. Technical advisors stationed in the field by the state testified at proration hearing in June that average reservoir pressure of the field declined 7.58 pounds between May 12 and June 12. During this period allowable production amounted to 13,636,393 barrels, or an average of 439,883 barrels daily, resulting in an average pressure drop of .556 pounds per 1,000,000 barrels of allowable oil. In view of this rapid decline of reservoir pressure engineers recommended that the field's quota be cut 17,000 barrels daily. The commission elected to lower the field's allowable by 12,854 barrels effective June 21 by reducing the proration factor from 2.6 percent to 2.32 percent of the hourly rated potential of nonmarginal wells.

Pressures Have Declined

Average bottom-hole pressure of the field has declined 18.36 pounds since January 12, 1936, or an average of 3.06 pounds per month, according to readings made by commission's engineers from 34 key wells distributed at intervals over the five counties that participate in production. The first monthly reading conducted this year placed the average for the field at 1200.8 pounds per square inch, corrected to a sub-sea depth of 3300 feet. Reservoir pressure gained a fraction of a pound on the February and March readings, but dropped slightly more than seven pounds in May and again in June. On June 12 the average for the field was placed at 1182.4 pounds, according to commission's records.

An analysis of the reservoir pressure table for the past six months reveals that sharp declines have been recorded by key wells in the south portion of the Joiner area and along the east flank of the structure. Key wells situated where sand conditions are exceptionally favorable, and those benefited by the advance of the water table along the west portion of the field have maintained a slower rate of decline. No readings are taken by the commission in the original Joiner area, involving a broad territory and a large percentage of the field's pumpers, as the pressure has been below 700 pounds for more than a year.

Reduced allowable applied to the field on June 21 was sufficient to enable the reservoir pressure to register a slight gain on the next monthly survey. Engineers are forecasting a more favorable report on the physical condition of the field when next readings are made public, but the rise in pressure will be temporary due to new completions offsetting the cut in withdrawals and natural tendency of a large section of the field to reflect drainage even though restricted to 20 barrels daily per well.

Wells situated in the most prolific sections of the field have been absorbing the entire burden of production curtailment during the past year. Each cut in the size of the proration factor greatly reduces

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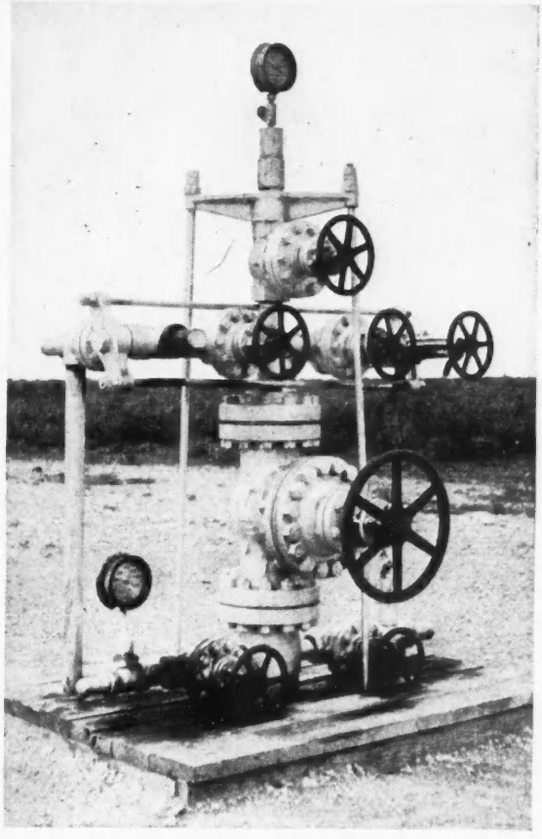

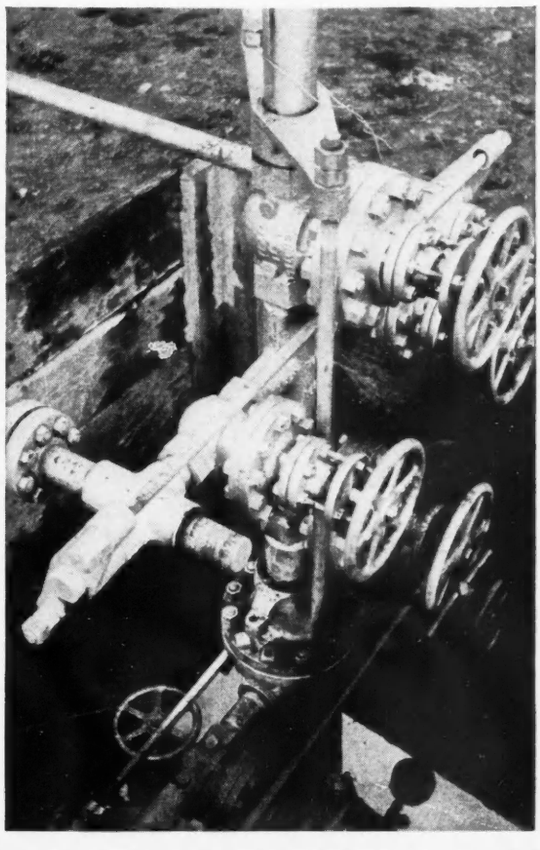

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ANY NUMBER OF CORES MAY BE TAKEN AT ANY DEPTH, IN ANY FORMATION, WITHOUT REMOVING THE DRILL PIPE

REED B-R 6-CONTACT REAMER and HARD FORMATION DRILLING BIT with core barrel in position showing a few of the long, well formed cores taken on Sinclair-Prairie, Stockton, No. 1.

REED B-R DRILL COLLAR and THREE-BLADE DRILLING BIT with core barrel in position showing one of the long, well formed cores taken at 9,127 feet in the Gulf Coast.

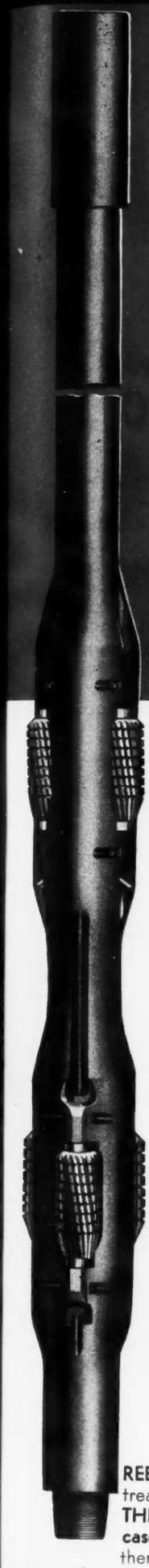
REED ROLLER BIT COMPANY

HOUSTON • OKLAHOMA CITY • NEW YORK

Mid-Continent and Gulf Coast Distributors for MARTIN-DECKER Products — Sold Through Supply Stores Everywhere

REED ROCK BITS AND REAMERS

STRAIGHT HOLE ASSURANCE



SHOWING THE RESULTS OF THE

TEARING—TWISTING—ACTION

OF THE

REED CROSS-ROLLER DESIGN

THE CUTTERS ARE FORCED TO TAKE A CIRCULAR PATH. THIS CONSTANT CHANGING OF DIRECTION FROM A STRAIGHT LINE

CAUSES THE CUTTER TEETH TO

TWIST and TEAR

the formation as they

PENETRATE

REED REAMERS are precision manufactured throughout and heat-treated in electrically operated, automatically controlled furnaces. **THE BEARING BLOCKS holding the Reamer Cutters are specially case hardened** and **embedded in the Reamer Body by welding** so that there are no loose bushings or parts to be lost in the hole.

WHEREVER THERE IS ROTARY DRILLING

the number of wells remaining in the non-marginal class, or those subject to further curtailment. This shifting of the burden of production curtailment to the best properties has been particularly pronounced within the past six months. On July 1, 1935, the 17,894 wells sharing in the output of the field included only 17.33 percent marginal wells, and exactly one year later the number of marginal wells increased to 75.8 percent of the total.

Oil Migrates

Curtailment of production from the most prolific leases while properties flanking on the east withdraw the marginal well quota of 20 barrels daily, results in a slow but constant migration of the oil from the most prolific properties to those that are bordering closer to the non-flowing stage.

Woodbine sand horizon has a natural tendency to equalize reservoir pressure under restricted production. This condition has been established conclusively by the building up of pressure in areas exposed to illicit production withdrawals on each occasion that the field was shut in in former years when State authorities were unable to enforce proration.

Enforcement agencies are currently holding down the daily yield of hot oil production to a nominal level. Equalization of reservoir energy has not been abated by regulated oil drainage. Owners of less favorably situated properties continue to enjoy flowing production, or an attractive fluid level in non-flowing areas at the expense of leases that center upon the so-called "fairway." The latter are replenishing the semi-depleted leases with oil, particularly those occupying the east one-third of the structure. Under the current method of apportioning proration quotas on a well potential basis, the operators that invested in "fairway" leases are powerless to prevent their oil in place from replenishing exhausted fluid levels under properties that have developed low pressure areas. Ultimate recovery of crude from leases that rate high on sand thickness will be lowered by this natural tendency of the oil and gas held in solution to migrate as the opportunity arises.

Pump Wells Increase

Variation of the proration allowable of wells in the heart of the field has a direct bearing on the performance of properties flanking the area on the east and west. Diminishing withdrawals from the most prolific wells has forestalled water intrusion on the west from reaching serious proportions, and has been particularly advantageous to east side leases that are slated to eventually produce mostly gas when the sand is virtually depleted of its fluid content, without the aid of flooding, or repressuring. Further relief for properties that have been largely dependent upon curtailment of "fairway" production will be nominal even though the commission elects to place all wells on a marginal well quota of 20 barrels daily.

Approximately 1200 additional wells were placed

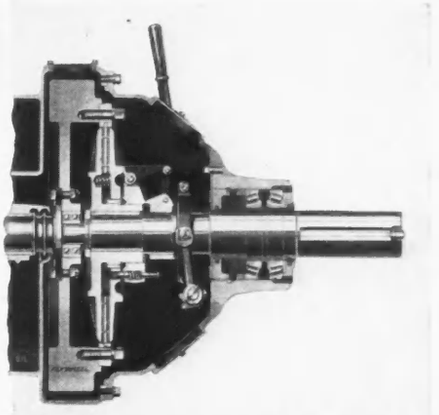
Comparison of bottom-hole pressure readings at 3300 feet sub-sea in the East Texas field by the Railroad Commission's engineers during the first six months in 1936

Company, Lease and Well No.	County	1–12–36	2–12–36	3–12–36	4–12–36	5–12–36	6–12–36
Amerada Pet. Corp.							
L. R. Hearne 3	G	1131	1152	1150	1149	1134	1139
Arkansas Fuel Oil Co.							
Hughey Ross 1	G	1180	1184	1176	1178	1170	1163
Atlantic Oil Prod. Co.							
G. A. Porter 3	G	1187	1198	1198	1200	1189	1191
M. T. Flanagan's Fee							
Whitehurst 1	U	1168	1158	1154	1167	1167	1153
Gulf Oil Corp.							
Mary Charles 2	G	1244	1250	1257	1254	1242	1244
S. Hilburn 18-A	G	1205	1195	1199	1204	1182	1183
H. Johnson 3	R	1270	1286	1302	1282	1270	1270
Jack Wiley 1	S	1262	1266	1266	1241	1254	1240
Humble Oil and Refg.							
L. Barton 4	R	1242	1247	1246	1246	1229	1229
W. R. Hughes 5	G	1168	1164	1164	1166	1150	1156
S. S. Laird 2-B	G	1087	1084	1082	1100	1082	1066
M. Mattox 4	U	1211	1222	1210	1221	1179	1206
Thompson 11	R	1158	1168	1164	1137	1156	1139
J. White 1	R	1204	1205	1200	1204	1201	1190
Magnolia Pet. Co.							
J. W. Free 14	G	1188	1187	1178	1198	1172	1179
Marathon Oil Co.							
W. T. Grissom 35	R	1307	1293	1303	1277	1286	1276
Kangerga 3, Acct. A	R	1315	1289	1306	1264	1224	1276
H. D. Kelly 2	C	....	....	....	....	1333	1318
J. A. Layne 3	C	1345	1365	1350	1369	....	....
Shell Pet. Corp.							
J. Ben Watson 3	G	1198	1201	1211	1219	1206	1201
J. Ben Watson 10	G	1226	1228	1235	1237	1225	1220
Sinclair-Prairie Oil Co.							
J. W. Akin 4	G	1184	1196	1190	1191	1172	1195
A. S. Jarvis 7-C	S	1339	1335	1337	1326	1336	1315
H. J. Thomas 3	G	1243	1245	1251	1252	1238	1237
A. Wiley 5	S	1308	1311	1318	1305	1302	1300
Stanolind Oil and Gas							
D. W. O'Quinn 3	R	1256	1264	1263	1261	1258	1246
M. Schuyler 2-A	R	1012	1005	1007	988	984	970
W. H. Siler 15	R	1052	1036	1044	1031	1021	1014
W. H. Siler 34	R	1002	993	1000	984	988	960
E. L. Walker 1-A	G	1284	1284	1278	1280	1283	1272
Sun Oil Co.							
J. M. Haynes 5	G	1219	1235	1231	1235	1232	1233
Horace Schuyler 1-A	R	1225	1216	1217	1183	1232	1196
Horace Schuyler 1-B	R	1136	1125	1120	1094	1107	1090
Tide Water Oil Co.							
J. M. Finney 2-A	R	1049	1047	1094	1037	1047	1021
C. G. Strong 1	G	1214	1216	1218	1232	1210	1215
Average Total	..	1200.9	1201.47	1202.18	1197.41	1190.02	1182.44

POWER TAKE-OFFS

for OIL WELL PUMPING

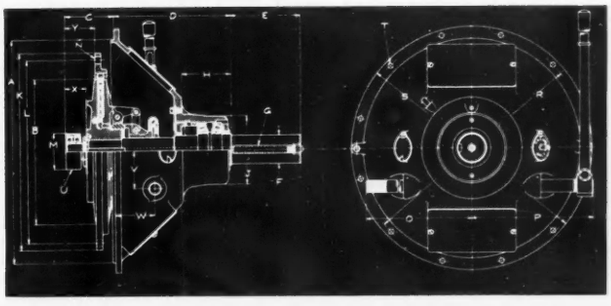
The use of "high-speed" multi-cylinder engines in oil well pumping service demands a self-contained power take-off unit as a link in the drive between engine and pumping rig—for efficient starting . . . easy picking up of the load . . . and satisfactory application of pulley or V-belt drive. The first multi-cylinder engines used in oil well pumping had Twin Disc Power Take-Offs; and today a great majority of pumping engines are Twin Disc equipped. Why? Because 17 years' extensive experience in the oil fields and an intimate knowledge of the industry's requirements enable Twin Disc to produce power take-offs having the outstanding qualities for this type of service.



TWIN DISC POWER TAKE-OFF SECTIONAL VIEW

UNIT DESIGN—The complete clutch and power take-off assembly, mounted in rigid, cast iron housing, constitutes a self-contained unit. Simplicity in design and a minimum number of parts, coupled with highest grade material specifications, result in a well balanced unit with correct load distribution.

INTERCHANGEABILITY—Precision methods in manufacturing and inspection insure strict interchangeability of all parts. Tolerances rigidly maintained eliminate any necessity of fitting parts, either during the assembly or while servicing in the field.



CONSERVATIVE RATINGS—The actual slipping capacity of the clutches is far in excess of the hp. ratings listed. This insures long life and the ability to stand up under temporary overloads and moderate slipping during starting periods—without resulting in any permanent damage.

FRICTION SURFACES—Clutch capacity and resistance to wear are greatly dependent on the friction surfaces. Highest grade friction material, well proportioned friction surfaces together with efficient heat dissipation, insure correct operating conditions which make for maximum life of the friction discs.

LIBERAL BEARINGS — All anti-friction bearings are selected with liberal safety factors to insure long life under normal operating conditions.

EASY ADJUSTMENT—To maintain clutches in perfect operating condition, periodical adjustments must be made to compensate for the wear of the friction surfaces. The Twin Disc method of adjustment requires no tools and can be performed through the hand-hole provided for this purpose.

S.A.E. DIMENSIONS—Mounting dimensions in accordance with S.A.E. standards are strictly maintained. Twin Disc Power Take-Offs are applicable to any commercial engine having S.A.E. flywheel housing dimensions.

Write for Bulletin No. 105

TWIN DISC CLUTCH COMPANY

1336 RACINE ST., RACINE, WISCONSIN

SALES AND SERVICE OFFICE: 310 E. 4th ST., TULSA, OKLA.

SPECIFICATIONS

MODEL	Drawing No.	S.A.E. Housing No.	†Recommended for Engines Developing Max. Torque Ft. Lbs.	†Maximum Recommended Hp. @ 1,000 RPM
C-108HP	X8419	5–4–3	135	25
C-110HP	X8249	3–2–1	230	40
B-111HP	X8246	3–2–1	340	60
B-114P	X8409	1–0	580	80
B-214P	X8295	1–0–00	930	110
B-118P	X7243	0–00	1200	150

HOUSING DIMENSIONS

S.A.E. No.	DIMENSION A	R	S	T
5	12 3/8	13 5/8	14	8–13/32
4	14 1/4	15	15 7/8	12–13/32
3	16 1/8	16 7/8	17 3/4	12–13/32
2	17 5/8	18 3/8	19 1/4	12–13/32
1	20 1/8	20 7/8	21 3/4	12–13/32
0	25 1/2	26 3/4	28	16–17/32
00	31	33 1/2	34 3/4	16–17/32

†Ratings listed are intended for use with 4 or 6 cylinder engines having normal cyclic variations.

Ratings for special conditions involving slow speed operation and large cyclic variations should be obtained from the Twin Disc Clutch Company for individual installations.

TWIN DISC CLUTCHES

		OVERALL DIMENSIONS				INSTALLATION DIMENSIONS																
			SHAFT																			
MODEL	Drawing No.	Housing Length D	Dia. F	Length E	Keyway G	A	B	C	H	J	K	L	M	N No.–Dia.	O	P	R S T	U	V	W	X	Y
C-108HP	X8419	7	1 3/4	6	1/2 x 1/4	See Separate Tabulation for S.A.E. Clutch Housing Dimensions	8	3 15/16	2 1/8	4 1/2	10 3/8	9 5/8	2.4409	6—13/32	7 3/4	7 3/4	See Separate Tabulation for S.A.E. Clutch Housing Dimensions	305	3	1 7/8	1 1/16	1 1/2
C-110HP	X8249	8 5/8	2 1/4	5 1/2	5/8 x 3/16		10	3 15/16	3 1/4	5 1/2	12 3/8	11 3/8	2.8346	8—13/32	9 3/4	9 3/4		5606	3	1 7/8	1 1/16	1 13/16
B-111HP	X8246	9 1/4	2 1/4	6 1/2	5/8 x 3/16		11 1/2	3 15/16	3 1/4	5 1/2	13 7/8	13 3/8	2.8346	8—17/32	9 3/4	9 3/4		5606	3	3 3/16	1 5/8	2 1/8
B-114P	X8409	12 3/8	3	8 1/2	3/4 x 3/8		14	3 15/16	4	5 1/2	18 3/8	17 1/4	3.1496	8—17/32	12 3/4	12 3/4		5307	4 1/2	5 7/16	2 5/16	2 13/16
B-214P	X8295	13 3/4	3 1/2	10	7/8 x 7/16		14	3 15/16	3	7 1/2	18 3/8	17 1/4	3.1496	8—17/32	12 3/4	12 3/4		5307	4 1/2	6 5/8	2 1/16	2 1/16
B-118P	X7243	14 11/16	3 15/16	10	1 x 1/2		18	3 15/16	3	7 1/2	22 1/2	21 3/8	3.9370	6—21/32	12 3/4	12 3/4		5309	5 1/8	7 5/8	2 3/16	3 5/16

on the pump during 1935. The number of wells equipped with mechanical flowing devices that utilize residue gas, compressed air and gas produced with the oil to supplement the depleted flowing energy are not available, but the market demand for this type of equipment for marginal wells has assumed large proportions within the past two years. Currently the field is credited with having about 2800 wells that require full time pumping, or agitation with pump at regular intervals in order to make their allowable. There are approximately 5900 wells equipped for pumping, including many properties that have had units in place since the field threatened to decline to the pumping stage in 1933 when production soared to about 1,000,000 barrels daily for a brief period. An average of 10 wells are completed each week that are incapable of natural flow.

State authorities have been lenient with operators that have dead wells, and produce the earned allowable of such wells from more productive wells on the same property by flowing, pumping or swabbing. Regulations specifically state that each well must make its allowable daily, but the commission lacks sufficient field personnel to enforce the order. Small operators are likewise permitted to engage commercial swabbing trucks at semi-monthly and monthly intervals to produce the allowable for the period at a less cost per barrel than is involved in equipping wells for pumping and engaging field men to operate the equipment.

Federal Tender Board on duty in the field is insisting upon adherence to the regulations in regard to each well producing the quantity of oil listed by operators under oath on monthly reports. Charges were filed against 14 operators and their employees for false swearing in a batch of complaints recorded in Federal Court at Tyler, June 29, and defendants have been permitted to post $5000 bond while awaiting further action on the federal complaint. More operators are slated to be cited for false swearing, according to reports.

A sharp upturn in the demand for pumping equipment for East Texas' dead wells is quite certain to result from the threat of prosecution by the federal enforcement agency.

Installation of pumping equipment on non-flowing wells in the East Texas field continues to center upon the original Joiner area Rusk County, and along the east flank of the long structure. The Gladewater area is the leading pumping center on the west side of the field. Need for pumping equipment in the east portion of the field is being accelerated by the excessive gas/oil ratio that prevails in flowing wells and those operated by mechanical lifts in gas cap areas.

Gas Caps Developing

Gas cap zones have developed on stripper-well leases that have experienced a shrinkage of the fluid column along with decline of reservoir pressure to a level that permits the gas to come out of solution. State conservation rules limits the gas/oil ratio in this field to 500 feet per barrel of oil. Gas cap areas that have reached a more advanced stage interfere with normal pumping operations by causing the working barrel parts to become gas locked. Operators have learned that this interference can be temporarily removed by bleeding off gas from the casing until casing pressure is reduced sufficiently for fluid to rise in the hole. Natural gasoline plants serving the gas cap areas are unable to process all the gas tendered along with that contracted for in other sections of the field. An abnormal waste of gas is occurring, and the release of the gas is having a tendency to speed up the decline of the reservoir pressure of neighboring properties.

Reservoir pressure in several of the gas cap areas has declined to less than 600 pounds, according to private surveys conducted by companies operating properties therein, and pressure on the casing builds up to more than 500 pounds when closed for a period. The gas cap difficulty has not been so pronounced along the east side of the field to the north of the Kilgore townsite in Gregg County, as more favorable sand conditions extend out near the production border line and the fluid level is replenished at the expense of nearby properties.

Water Not Yet Serious

Salt water intrusion has not reached a serious stage. Only about 1500 water wells are accounted for on late surveys, and the aggregate yield of brackish fluid by the field is currently estimated at between 25,000 and 30,000 barrels daily. This water is generally accumulated in earthen pits at the source of supply, and eventually finds its way into the streams that drain the field. Stream pollution causes numerous complaints during dry periods.

Operators are devoting considerable attention to the impending salt water disposal problem. Contamination of the fresh water streams to the extent that the water is unsuitable for domestic, industrial and irrigation purposes would wind up in expensive damage suits. Operators have not perfected a program of water disposal. Lease ownership in portions of the field is subdivided in such small parcels of land that individual disposal units are out of the picture. A cooperative program would be difficult to accomplish where a large number of property owners are involved.

Fourteen major and substantial independents are now conducting an experimental test of returning the salt water to the Woodbine sand horizon. An input well was drilled in southeastern Smith County and west of oil production to determine if any sizeable quantity of water can be returned to the source beds, and an accurate check is to be maintained on cost per barrel of water disposed by this method. Approximately 300,000 barrels of salt water was produced from a nearby failure to carry out the water injection experiment. Pumping of water into the input well has not progressed sufficiently to determine if salt water from the field can be economically returned to the Woodbine through the drilling of a series of key wells along the west flank of the structure. However, preliminary tests proved that large quantities of water can be pumped into the sand.

LIFTING COSTS ARE LOW WITH
ELECTRIC POWER

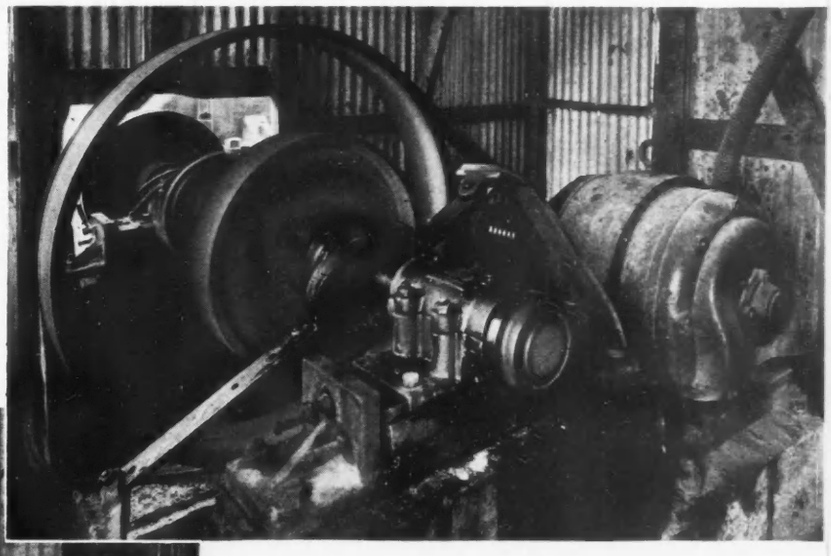
AT BARBERS HILL, FOR EXAMPLE:

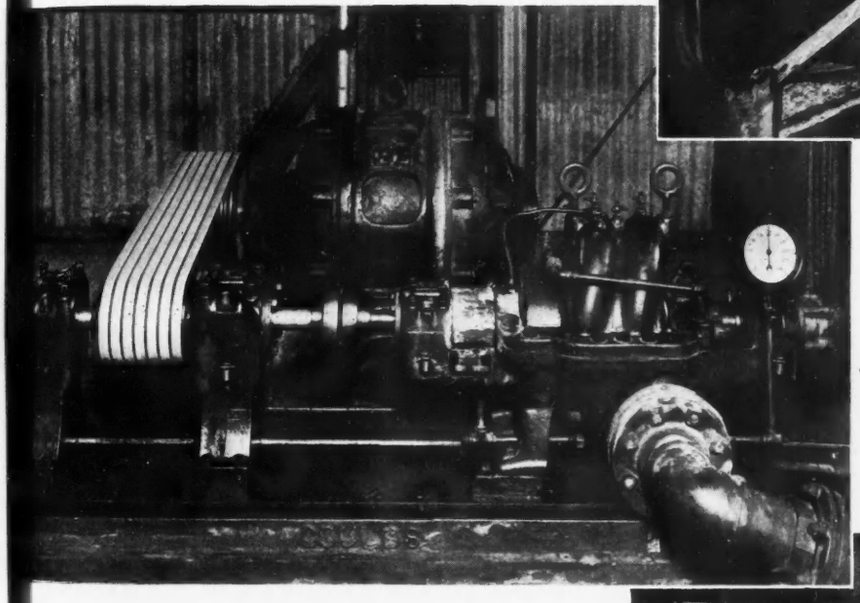
This 25 H.P. motor has been pumping a deep well, continuously, for

5 YEARS →

with

NO MAINTENANCE COST!





This 50 H.P. motor has been driving a field water system pump for

← **7 YEARS**

and still

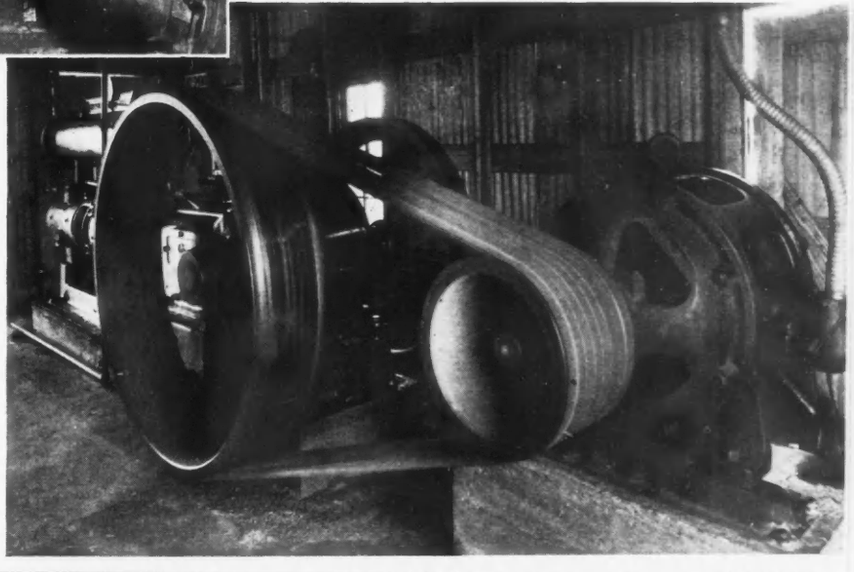
NO MAINTENANCE COST!

This 100 H.P. motor has driven a gas lift compressor for

3 YEARS →

and the Operators report

NO MAINTENANCE COST!



IN MANY PUMPING AREAS

Sand Troubles

ARE A PROBLEM OF IMPORTANCE

By BRAD MILLS, Associate Editor

SAND long has been regarded as one of the most serious problems encountered in pumping wells. Fields in every oil producing district in the world are affected by sand encroachment, but the difficulties caused by the sand have not prevented profitable operations in many areas. At the very best however, sand is regarded as a nuisance, and both operators and equipment manufacturers have cooperated in development of pumping methods that retard the entry of sand into the hole, and still more important means of handling the sand after it has found its way into the hole.

Sands causing trouble in pumping wells are not uniform, and each type presents a different problem. The sand grains in many instances are coarse and have a tendency to settle toward the bottom of the hole, while in other fields the sand grains are very fine and have a tendency to float in the fluid. In a number of fields, some of the sand and shale particles settle to bottom and others stay in suspension until they are brought to the surface.

In wells showing a high percentage of floating sand, the traveling equipment suffers most. The abrasive effect of the sand rapidly causes the carefully machined working parts of the pump to become worn and pitted. In wells showing a coarse and heavy sand, the cleaning out problem is most acute.

As strange as it may seem, a few fields produce most satisfactorily when the fine sand is brought to the surface with the oil. Methods have been developed for handling the sand at the surface, and around each well a small mountain of sand will be found. In other fields it is best to let the sand settle to the bottom of the hole, a process that calls for frequent cleaning-out operations. Wells yielding a high percentage of sand at the surface with the oil and water show very frequent replacements of pumping equipment.

All types of pumps may show severe wear where the sand mixes freely with the fluid. Several specially designed types of pumps are in use because of their ability to handle the sand content and to withstand the wear.

Producing formations at Oklahoma City are mostly porous and soft. This is particularly true of the Wilcox zone. This porosity has affected the producing qualities of the field in many ways. Loss of pressure, loose sand, water, loss of fluid from drilling wells, and other factors working toward poor producing conditions may be partially attributed to porous producing zones. The movement of sand has been the chief contributing force to pumping troubles below the surface. This porosity was ideally suited to high potentials during the early life of the field, but it will not be such an effective aid in the future, where a dozen different pumping arrangements are being tried.

Variable sand conditions have made it necessary to employ a number of production methods. Some wells have made enormous quantities of sand with the oil, while others have produced very little sand. It is interesting to note that wells with a low fluid level, and particularly those that have been heavily produced, have given most trouble from sand. High bottom-hole pressures and the tendency in the past to allow the wells to flow at a high rate were factors in high sand yields, an early trouble that has been transmitted to the pumping stage of the field. If it were possible to produce all wells under about the same conditions, sand could be controlled in many low pressure pumping wells.

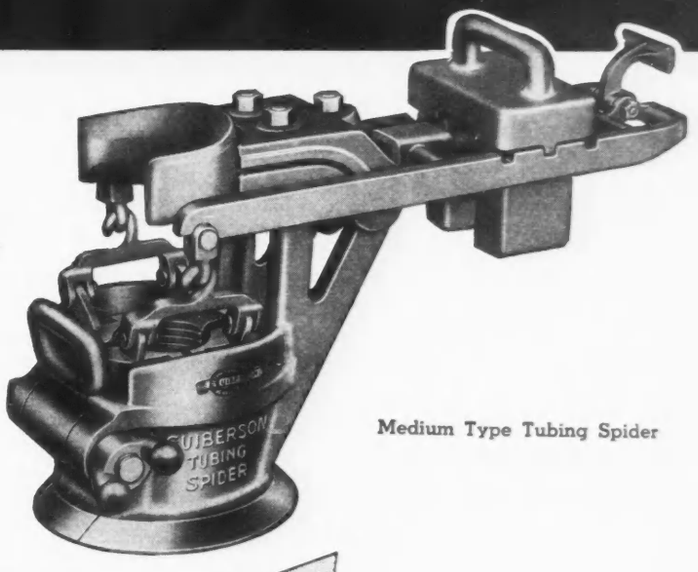
The presence of sand at Oklahoma City has been a barrier to the use of pumps, although many wells are being pumped satisfactorily. The fluid level is low and the fight for production has disturbed the producing formation in wells that ordinarily might be pumped with ease. A number of wells are on various forms of gas-lift, since the abrasive effect of sand with type of installation is not so great as with the conventional pump. Many wells producing on gas-lift require frequent cleaning out work, the heavy sand settling to the bottom of the hole and filling it up to a point near the show of the casing. In wells having a satisfactory fluid level, ordinary pumps can be used to advantage.

Sand causes a surprisingly small amount of trouble in the East Texas field, where 2000 to 3000 wells are on the pump. In the south part of the field, loose and floating sand has appeared, but not in sufficient quantities to prevent pumping operations. The fluid level in this field is so high that it is possible to obtain the daily allowable on the pump without disturbing the producing formation. Sand and shale will give trouble when it becomes necessary for operators to fight for their production and the fluid level recedes. One company in the southeast part of the field has a large number of pumping wells that have produced their allowables daily for from one to three years without a pulling job. Water now is more of a problem in edge wells than sand.

The Coalinga, California, field is an excellent example of the successful development and operation of a field that produces large quantities of sand with the oil. This area has produced mountains of sand

Protect YOUR TUBING

At TOP of hole

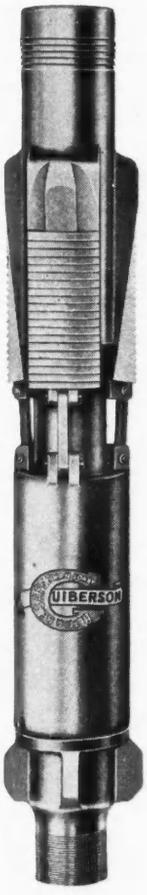


Medium Type Tubing Spider

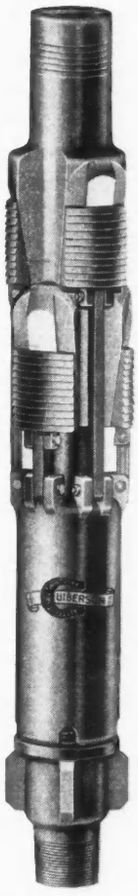
GUIBERSON Tubing Spiders offer two outstanding advantages. The first is their exclusive, patented "guide head." In practically all derricks pipe hangs off center in the well—drags on one side of the hole. This is the great source of danger and difficulty in handling spider slips. The **GUIBERSON** adjustable guide head guides the pipe to exact center of the spider's bore.

The second great advantage offered is the weighted lever which permits semi-automatic operation of the slips with hand or foot. Lever drops slips accurately and easily into position, as pipe is held in center of bore by the guide head.

At BOTTOM of hole



Type "E" Tubing Catcher



Type "C" "Duplex" Catcher

GUIBERSON pioneered the Tubing Catcher, and the newest **GUIBERSON** models, Types E and C, here shown, represent the last word in tubing catcher design.

AMPLE SLIP AREA: Former slip area of Guiberson Catchers, ample for wells of average depth,—has been more than doubled in these models. Slip area of the two models is approximately the same, and will support any length of tubing in today's deepest wells without undue strain on casing.

MAXIMUM BY-PASS AREA: Despite the increased slip area, fluid by-pass area has not been reduced.

STEEL BODY: Over-all strength to carry the heaviest loads is assured by our use of steel for all load-carrying parts. Heads, slips, tubes and guide couplings are of steel.

SPECIAL SPRINGS: The springs which actuate catchers must be non-fatiguing, or the catchers will become useless. The steel for Guiberson Catcher springs has been perfected through years of experience and research. **GUIBERSON** springs are of the correct steel and under the correct tension to give maximum protection and dependability.

For complete specifications and prices see Guiberson Section, 1936 Composite Catalog.

THE GUIBERSON CORPORATION

Box 1106, Dallas, Texas

TULSA: 504 Wright Bldg.: HOUSTON: 2241 Hermann Drive: WICHITA, KAN.: 530 S. Fountain St.: NEWARK, O.: First and Locust Sts.: LOS ANGELES: W. R. Guiberson Co., 723 E. Gage Ave.

GUIBERSON

BETTER BE SAFE THAN SORRY

over a period of 45 years. Soon after the discovery of the field in 1890, it was found, under conditions existing at that time, that more oil could be obtained by producing large quantities of sand. The portion of the field producing the heaviest crude was first developed, and this part of the field yielded much more sand than the deeper producing section that showed a light crude.

During the early history of the field, the sand was taken as a matter of fact. Experiments of all kinds showed that the heavy oil from shallow wells could be produced effectively with a large percentage of sand, and some operators claimed that the greatest amount of oil could be obtained only with a free flow of sand. It was not unusual to produce a mixture containing 80 percent sand, and it is safe to say that many good producers have yielded more sand than oil. In most of the wells showing high sand yields, best results were obtained by encouraging the sand to stay in suspension. Settling of the sand to the bottom of the hole gradually shut off the producing formation. Lifting the heavy oil has been a real problem, and a screen effective in shutting out the sand has been equally as effective in holding back the oil.

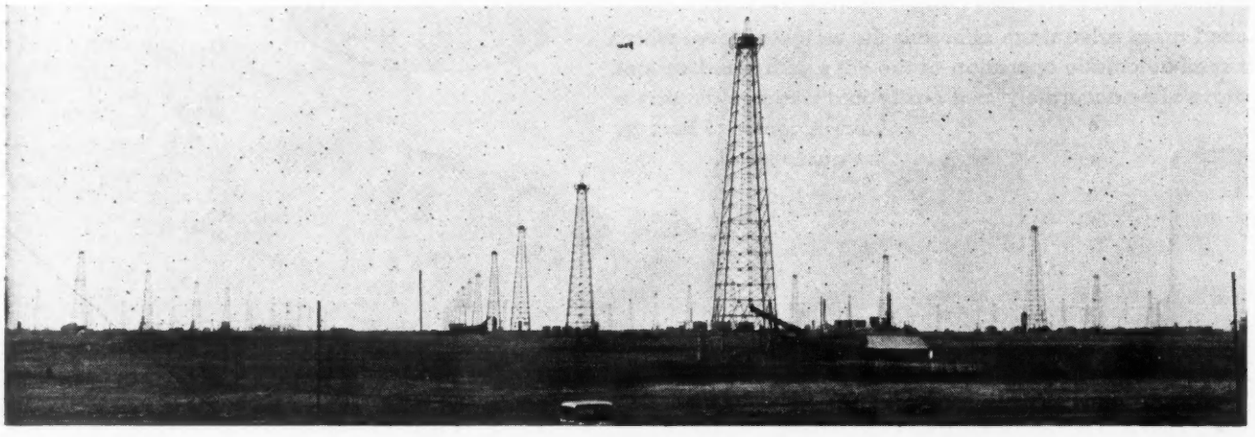
The early method employed was to allow the wells to pump into an earthen pit. Eventually the sand settled out and the oil was pumped to the tanks. All these wells became surrounded by a high ridge of sand. Pumps and rods were pulled at frequent intervals. Some of the old producers now are pumped into tin troughs and small tanks, the latter being used for settling the sand to the bottom.

The action of the sand has been the subject of much discussion. There is a difference of opinion as to whether large craters are formed underground, or a large number of pockets exist. Early producing methods generally called for large perforations in the bottom of the oil string, which extended to a point near the bottom of the hole. The perforations varied in size, depending upon the gravity of the oil and the amount of sand an operator wanted to produce. Production probably would have been smaller in the beginning had a fine screen been used. The sand condition was taken as a matter of course, and it was produced just as wells might now be produced with a large percentage of water.

Wells shut in and re-opened were found to produce a greater percentage of sand than before the suspension. Where the wells came back with a greater production of oil, they invariably showed a greater quantity of sand.

The Coalinga field has been the mecca for all kinds of panaceas, some good and many not so good. Several forward steps in pump design have been based on experiences with sand in this field. A number of sand pumps were designed to handle the encroachment at Coalinga, and suction to remove sand was at one time considered a novelty in the area. The newer part of the field is being pumped with modern equipment, and the sand is considered a nuisance and not a necessity. Liner pumps and other modern pumps have been successfully used, but the older type pumps are handling sand in the shallower producers. Experience at Coalinga indicates that a production method that does not disturb the producing formation is best.

In fields producing from firm and stable sands, many operators do not run screens or liners of any kind. One company in the south end of the East Texas field has a large number of pumping wells without liners, but other operators have run liners in all completions. Most of the pumping wells are being little more than skimmed to obtain the 20-barrel daily allowable. Sand will give trouble when the fluid level drops and it becomes necessary to fight for production.



Loose sand causes trouble in pumping wells at Oklahoma City, but most of the coarse sand settles to the bottom of the hole.

At Oklahoma City the sand settles to the bottom of the hole so firmly that it may be cored. Sand cores recently taken from a pumping well were much harder and more firmly cemented than the original sand cores taken during drilling operations. Sand of this type tends to sink in the oil, but enough is carried upward to score the pump and working barrel.

Where the producing formation tends to run to shale and sandy shale, sand causes little trouble. Many California fields are producing from formations of this type. Gulf Coast fields produce from very fine sands and liners of some type are necessary to shut out the loose sand.

Oil companies produce their wells so that a minimum quantity of sand will be drawn into the hole. It is impossible to determine the amount of damage done by sand in many fields, but many pulling jobs attributed to other causes should be charged to sand.

EIGHT MAJOR FIELDS UNDER DEVELOPMENT IN OKLAHOMA

Will Need 1500 Pumps

By GRADY TRIPLETT, Staff Writer

EIGHT major fields under development in Oklahoma offer 1500 wells which must have means of artificial production when natural pressure is expended. Most of these fields still have wells drilling. By adding to the wells completed to those drilling the total for these fields reaches 1325, which are in line for lifting equipment. Another 175 wells has been allowed for future drilling. This number is conservative for the eight fields, so that 1500 is a safe total for calculating lifting equipment. Other fields in the state probably have 500 flowing wells.

In addition to these fields there are a few in Oklahoma where development is not far enough along to allow estimates. The Moore pool of Cleveland County, the deep production at Fox, Carter County, and the deeper zone at Cement, Caddo County, are examples. The extent of these fields and the date of their need for lifting, throws them out of immediate consideration.

Fixing a time limit for the eight fields listed also is impossible. Fitts is still a flowing field. No doubt it will have gas or air lift when natural flow is no longer possible. The South Burbank area is under a repressuring project, which may maintain natural flow over a long period.

On the score of the number of wells Fitts in Pontotoc County is foremost as a prospect for artificial lifting methods in Oklahoma. This field had 305 completed wells June 1. Another 95 drilling brought its assured total to 400. Another 50 wells was credited to the fields. Since the field has seven wells producing from the Simpson formation below the Wilcox sand, the possibility exists for the final total to extend well beyond the 450 credited to the field.

For Oklahoma City the 300 wells credited to prospective lifting needs comes half from the older part of the pool and half from the north extension. When last potentials were taken the older part of the field had been 39 wells still flowing from the Wilcox sand. Another 90 of the wells producing from this formation were using either gas lift, swab, bottom-hole pump and combinations of two of these methods. An expectation within reason is that the older part of the field will have 150 wells from these sources that will finally come to the pumping stage.

The north extension of this field presents an early need for artificial lifting equipment. As now defined this part of the field will have 125 wells, of which 70 are complete and flowing. The 150 total comes through crediting the area with at least 25 more wells. Between the old and new parts of the pool there is a belt large enough to require more than 25 wells but the laxity of producers to enter the area in the face of low initial pressure and high bonus requirements indicates that the area will not be drilled as has other parts of the field.

The north extension came in as a low-pressure area, since gas had been drained away in developing the south part of the field. Pressure is now under 400 pounds. Engineers expect to maintain natural flow down to 200 pounds. After that the procedure will be to place wells on gas lift. When production is no longer feasible by lift, the pump will be the final resort.

That part of the South Burbank pool which is under a unitized repressuring project offers a prospective area for the installation of pumping equipment but success of gas injection justifies the conclusion that these wells will flow for a long period. Of the 120 wells in the pool, 90 are within the area under repressuring. Only eight of these are pumping.

The Lucien pool, Logan County, comes under the class of a field now ready for the pump. It has 82 completed wells and should have 100 when fully drilled. Engineers consider its flowing life close to the end.

Keokuk Falls, Seminole County, is credited with 100 wells when finally drilled. This field had 71 completed wells June 1. It is one of the smaller pools of the Greater Seminole area, where the practice is to bring gas lift into play at the end of the natural pressure and finally to resort to beam pumping.

The Jesse pool, Pontotoc County, is one of the recent developments, whose boundaries are not defined. It has but 10 producing wells and the 100 credited to it are an estimate.

Edmond, Oklahoma County, has 45 producing wells with drilling still under way. It should have 75 wells, with the gas lift the first method of lifting by artificial methods and individual pumping units the final method of raising the oil.

The 32 wells now producing in the Crescent pool, Noble and Logan counties, are still flowing. Recently production there has been found in the second Wilcox sand, whose extent is not known. The estimate of 50 wells for the pool may be too low, since the field may be redrilled to penetrate this sand rather than by taking existing wells deeper. Gas lift and finally pumping should be the order of lifting development for this field.

Oklahoma Fields Which Are in Line for Artificial Lifting

FIELD	Estimated No. of Wells
Fitts	450
Oklahoma City	300
South Burbank	150
Lucien	100
Keokuk Falls	100
Jesse	100
Edmond	75
Crescent	50
Total	1,325

Performance Records

ON PRODUCTION AND EQUIPMENT GREATLY ASSIST WELL OPERATIONS

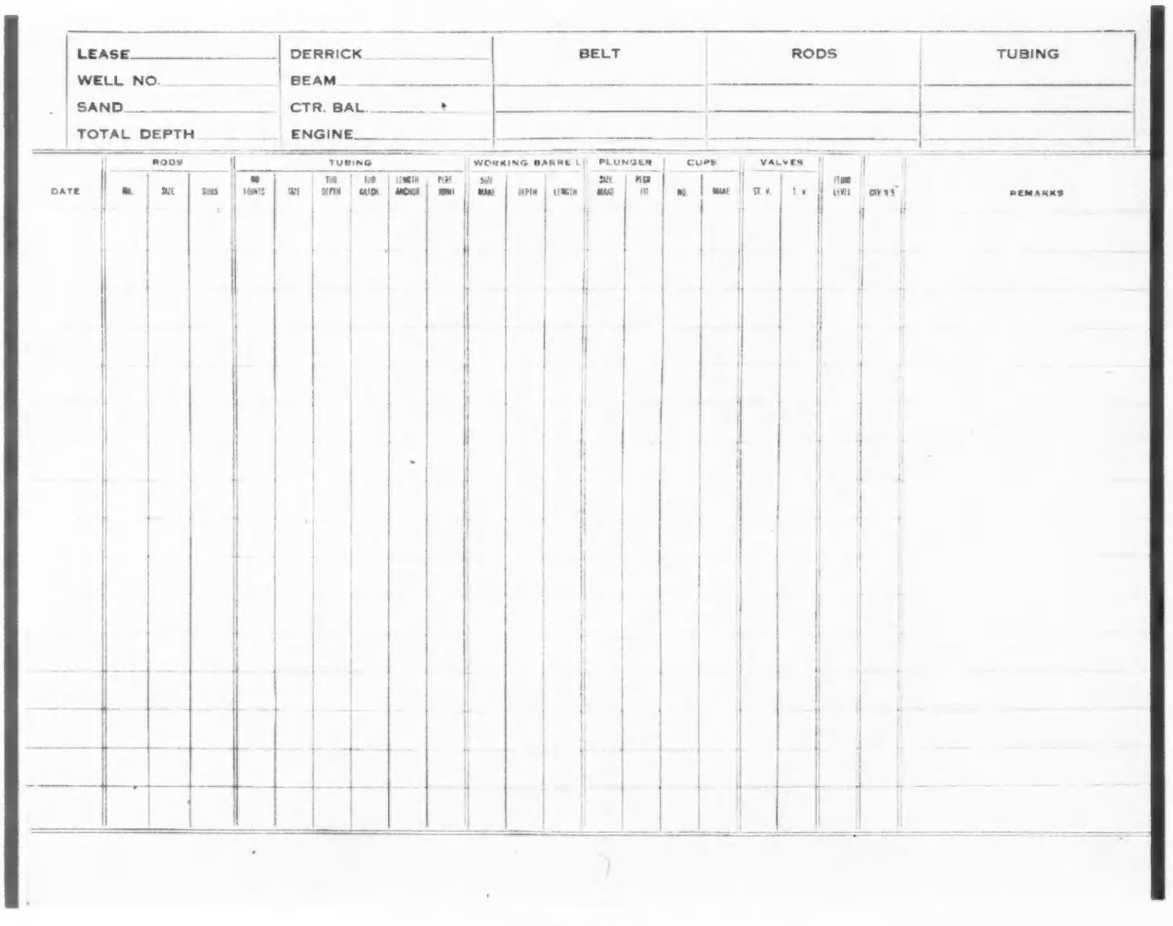
By WARREN L. BAKER, Editor

ADEQUATE records on production performance of wells and service of equipment are recognized today as an important function of any efficiently operated producing department. Past experience has demonstrated convincingly that there are many advantages, both mechanical and financial, to be gained by such efforts. When installing such a system it is natural that many questions will arise, and these can be eliminated only by constant improvement of the record sheets. It is necessary the data be complete as possible, yet the task of keeping the information must not be so burdensome as to offset the mechanical and financial improvements achieved by the work.

Production Record Style

Shell Petroleum Corporation is using a system in its Seminole, Oklahoma, district that is interesting. It has been perfected to its present form over a period of years. The first application of the plan was in the Tonkawa, Oklahoma, field, when C. M. Copeland, R. M. Dannenberg, and L. Ruark worked out the record sheets. All these men at the time were at Tonkawa, but Copeland now is superintendent in the Seminole district, Dannenberg is an engineer in the production department at St. Louis, and Ruark is assistant superintendent at McPherson, Kansas. When Copeland was transferred from Tonkawa to Seminole, he installed the system immediately and it has been most successful.

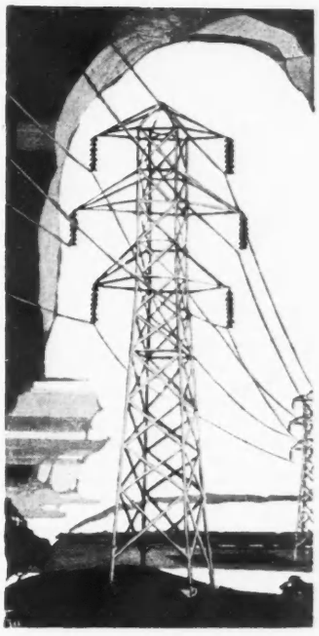
Shell Petroleum Corporation's complete well record is comprised of three parts, two of which are the usual letter file type kept in filing cabinet folders. The cabinet files are not exceptional. One is confined to matters, including correspondence, that pertains to the complete leasehold. The other consists of individual well files, in-



LEASE	DERRICK	BELT	RODS	TUBING
WELL NO.	BEAM			
SAND	CTR. BAL.			
TOTAL DEPTH	ENGINE			

DATE	RODS			TUBING						WORKING BARREL			PLUNGER		CUPS		VALVES				REMARKS
	No.	Size	Class	No Joints	Size	Tub. Depth	Sub Catch	Length Anchor	Perf. Nipple	Size Make	Depth	Length	Size Make	Perf. Fit	No.	Make	St. V.	T. V.	Fluid Level	Cavities	

FIGURE 1



WHEN
EVERYTHING
is taken into consideration
ELECTRIC POWER
for
PUMPING
DRILLING ... REFINING
is proven to be the most
economical, flexible, and safe

★

GULF STATES
UTILITIES COMPANY
General Offices:
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cluding correspondence. The two files work together in giving a full history of producing condition changes, and are used to supplement the third and most interesting part of the system. The latter is a well performance and equipment service file kept in a loose-leaf notebook. It is a quick, ready reference that acts as a guide to the superintendent in operating his wells.

The loose-leaf notebook record consists of two parts, one being an equipment service performance table (shown in Figure 1) and the other carrying production data (see Figure 2). Every well of the company in the Seminole district has a separate record on both Figure 1 and Figure 2 sheets. The two work so closely together that they have been particularly designed to permit Figure 2 to be placed in the book directly in front of Figure 1 and still allow the name of the well and its location to show. The size of the two sheets achieves this condition. The equipment service record is 7 inches high and 10¾ inches wide, whereas Figure 2 is 7 inches high and but 6¾ inches wide. In putting the sheets into a notebook the punched holes at the bottom of Figure 2 are made to correspond with the center and right-hand apertures that appear at the bottom of Figure 1.

Advantages of Records

Shell Petroleum Corporation has found these interesting records are saving considerable money on equipment repairs and replacement, besides greatly simplifying handling of wells and increasing their production to the maximum with less shut-down time. The records are a basis for recommendations on operation and equipment.

All wells are given individual production tests once each month, which is recorded on Figure 2 with the number of strokes, etc. Any changes in the volume of recovery is at once regarded as an indicator something needs to be corrected; perhaps the well needs cleaning out. In addition these production records serve to indicate the effect of changes in equipment. Whenever a new type piece of machinery is installed, such as different sized working barrel, the well is tested. Likewise, a check can be made on the influence of stroke lengths and speed.

Considerable detail is gone into in recording equipment failures on Figure 1. For example, when a sucker rod breaks the following data is recorded: the date, depth and location on rod joint. This information has been of much benefit. By reference to previous rod jobs it has been found that most wells suffer rod breakage at a particular footage. Therefore, it is possible to replace a part of the string and still have a good rod. In many wells it has been found that replacement of the upper part of the string will give good results.

Whenever production declines and there appears to be no trouble with the machinery, the fluid level and possible cavings are checked. This is performed by running a float can to determine the fluid top and top of cavings. Thus the superintendent is able to determine what wells need cleaning out.

In several instances a study of the equipment and production records have shown that changes in the plunger fit will improve the yield, and in some cases the fit may be minus 5, then minus 3, and sometimes up to plus 5 plungers.

Copeland believes in the producing superintendent keeping himself thoroughly familiar with conditions at all wells under his supervision, so he himself records the data on sheets called Figure 1 and Figure 2 in this article. One of the production clerks writes him a memorandum whenever a well is given a potential gauge, and also when any other change or breakdown occurs. In this way he is reminded constantly of the past history of each well, and is able to recommend operating practices that usually result in improved conditions.

PRODUCTION TESTS

Date	Oil	Water	Stroke	Speed	Time	Remarks

FIGURE 2

Specify

BRONZOID

. . . it will minimize your bearing troubles!

RESULTS OF TESTS MADE ON BRONZOID AND OTHER STANDARD BEARING METALS

METAL TESTED	PERCENTAGE COMPOSITION					
	Copper	Tin	Lead	Phos.	Arsenic	Relative Wear
Phosphor bronze, (standard)	79.70	10.00	9.60	0.80	0.0	**1.00**
Ordinary bronze	87.50	12.50	0.0	0.0	0.0	**1.49**
Arsenic bronze "A"	89.20	10.00	0.0	0.0	0.80	**1.42**
Arsenic bronze "B"	82.20	10.00	7.0	0.0	0.80	**1.15**
Arsenic bronze "C"	79.70	10.00	9.50	0.0	0.80	**1.01**
Bronze K-1	77.00	10.50	12.50	0.0	0.0	**0.92**
Bronze K-2	77.00	8.00	15.00	0.0	0.0	**0.86**
Bronze K-3	75.00	5.00	20.00	0.0	0.0	**0.70**
Bronze K-4	70.00	5.00	25.00	0.0	0.0	**0.58**
Bronzoid "79"	**70.00**	**10.00**	**20.00**	**0.0**	**0.0**	**0.17**
Bronzoid "76" (standard)	**70.00**	**6.00**	**24.00**	**0.0**	**0.0**	**0.11**
Bronzoid "74"	**70.00**	**4.00**	**26.00**	**0.0**	**0.0**	**0.09**
					zinc	
Bronze "Z"	77.38	5.62	11.42	0.0	6.54	**1.94**

In each of these tests, the bearing had a projected area of one square inch, and was run for 30 minutes on a dry shaft of cold rolled steel. Load 1000 pounds; speed 900 r.p.m.; no lubrication of any kind. Bearings weighed before and after test to determine relative loss. TESTS RESULTED IN SCORING OF SHAFT AND BEARING IN EACH CASE EXCEPT WHERE BRONZOID WAS USED!

A similar comparative test will be run upon the composition you are using in your machinery free of charge, upon request.

Many operators are now specifying that BRONZOID bearings and bushings be used throughout in overhauling and unitizing their drawworks.

AFTER thoroughly satisfying ourselves, through a series of tests lasting over a period of one year, that BRONZOID measures up to all claims made for it, we unhesitatingly recommend it to oil field equipment manufacturers as the finest metal available for bearings and bushings.

BRONZOID is sand cast from the same patterns that are used for other bronze bearings, and is available as rough castings or finished to manufacturers specifications. It is especially recommended for replacing babbitt bearings.

BRONZOID "76" RECOMMENDED FOR 80% OF ALL BEARING APPLICATIONS

PHYSICAL CHARACTERISTICS OF BRONZOID "76"—STANDARD

Yield Point	16,140*
Brinnell Hardness	38 *
Tensile Strength	26,367
Elongation in 2"	12½%
Compression:	
7,500	None
7,800	.0006
10,000	.0008
15,000	.0076

* Note high compressive strength compared with low Brinell hardness. (Best features of bronze and babbitt metals combined.)

BRONZOID "76" is recommended for speeds up to 1500 r.p.m. and loads not exceeding 1800 pounds per square inch of projected area. Maximum foot pounds per minute per square inch of projected area: 640,000. It is particularly recommended for use on Pumping Units, Draw Works, Rotaries, Crown Blocks, Rock Crushers, Locomotives, Diesel, Steam and Gas Engines, Thrust Bearings, Thrust Collars, Pump Liners and Clutch Pulleys.

While BRONZOID "76" is the standard alloy, BRONZOID "74," which is recommended for extreme high speeds and relatively light loads, and BRONZOID "79," which is recommended for excessively heavy loads at slow speeds, have proven equally efficient.

Brass, Bronze and Aluminum Castings; Brass and Copper Rolling Mill Products.

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Pumping Equipment Survey

SHOWS MANUFACTURERS CAN SUPPLY BIG DEMAND IF OIL COMPANIES COOPERATE

DURING the past five years the petroleum industry has witnessed a large growth in the number of its natural flowing wells. This has been due principally to curtailment of production, which has kept a great number of producing wells in the flowing class during this period, and new completions, therefore, have increased the number of flowing wells until at the present time there are approximately 29,000 such wells in the United States. For example, in Texas there are approximately 25,000 wells flowing today (Texas Railroad Commission Proration Report), and in Oklahoma an additional 1550; Kansas 285; 541 in California, etc.

Naturally, there will come a time, even with proration, when these flowing wells must depend upon artificial lifting equipment. Consequently, it is important to study the ability of oil field machinery manufacturers to supply the demand should there be a sudden surge in pumping equipment purchases by the producers of crude oil.

THE OIL WEEKLY has attempted to answer this question by asking all such manufacturers in a questionnaire sent out in June to furnish us with information as to their stocks on hand and in warehouses and their ability to manufacture the various important pumping items, which are the two outstanding factors.

Many Factors to Consider

The replies to our questionnaires have been fairly complete. However, there are several factors that many manufacturers of equipment must consider, and which in a number of instances make it hard to calculate the supply of both stocks and manufacturing capacity. Foremost among these considerations are the demands from other industries. There are many manufacturers supplying pumping equipment to the oil industry who must consider purchasing demand from other industries in determining their production of equipment sold to the oil industry. In some instances, it has been impossible to segregate the possible capacity to manufacture for the oil industry alone.

Too, in figuring the possible full capacity of a manufacturing plant one manufacturer naturally would count on his ability to add the necessary number of skilled workmen to his force to develop full capacity and one manufacturer logically would figure on no delay in raw material, tool steel, etc. Yet if all manufacturers were faced with a similar problem, there is not the slightest question as to actual shortage in skilled men and a probable shortage of many of the finished parts which go into pumping equipment.

Therefore, in considering the returns on the questionnaire sent out by THE OIL WEEKLY, we have realized that the figure which represents the hypothetical 100 percent plant efficiency could not be attained and from this hypothetical figure, after conferences with experienced manufacturers, it is the conclusion of our editors who made the survey, that *the pumping equipment industry is set up to take care with reasonable delivery of a demand to equip (exclusive of standard rig fronts)* 12,000 *to* 14,000 *wells per annum without running into a chaotic condition in plant operation, provided advance notice of demand be had.*

As said above the hypothetical 100 percent figure is considerably above this point.

On the other hand, the ability to equip 12,000 to 14,000 wells per annum is itself based on close cooperation between manufacturer and customer.

It should be remembered, too, that a considerable portion of pumping equipment manufactured in the United States is sold abroad.

As would logically be expected certain "bottlenecks" showed up in the survey. In other words, regardless of the ability of the manufacturing industry to furnish let us say, motors, in the final analysis the ability of pumping unit manufacturers to supply pumping units would in effect determine the number of wells which could be equipped.

Engines

The survey on pumping engines showed a total of 1260 engines suitable for pumping actually in stock, either in the hands of the manufacturers or in the hands of the supply companies. However, of this number 836 were 40 horsepower or less, 447 being 25 horsepower or below.

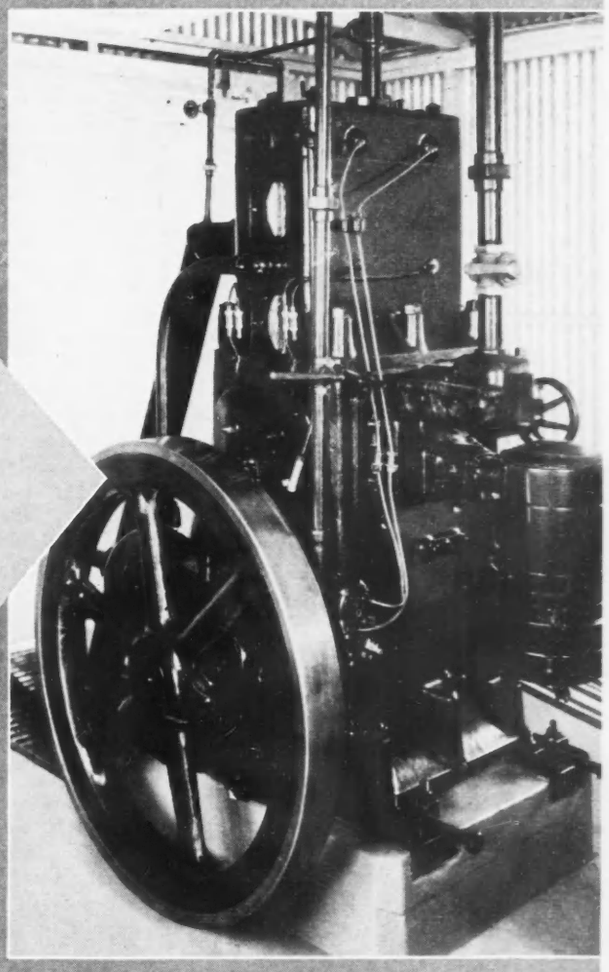
There were in stock at the time the questionnaire was made in June, 424 engines suitable for pumping, ranging from 41 horsepower up.

From the standpoint of manufacturing capacity, the 100 percent capacity on engines from 41 horsepower up totaled 86 per day but it should be remembered that in the case of some of the companies replying to the questionnaire other industrial usages would be competing with the oil industry for a share of these engines. Based on an ordinary working year, the engine manufacturers, therefore, should be able to produce around 12,000 to 13,000 engines of which probably 9000 to 10,000 could be available to

HERE IS A WAY TO REDUCE PUMPING COSTS

THE new vertical Type G-SD is the fourth engine built by Cooper-Bessemer in its effort to produce a pumping engine to meet modern requirements. Each of the other three failed on some point and the trade never heard of them.

If you are sincerely looking after the interests of your company, you will insist on getting these Type G-SD advantages.



ASK FOR THE TYPE G-SD BULLETIN

1. Crosshead construction cuts lube oil consumption.
2. Crosshead construction gives better scavenging and operating economy.
3. Two cycle two cylinder type at medium speed shows less down time, lower maintenance costs.
4. Timken main bearings make starting easier and reduces down time.
5. Die forged crank shafts and connecting rods reduce maintenance costs.
6. Pressure lubrication to all bearings, including wrist pins, reduce wear and maintenance to minimum.
7. Crank pin bearings are inexpensive replaceable precision sheets to reduce upkeep costs.

• • •

There are many other features which result in producing oil over a long period at a lower cost.

HE COOPER-BESSEMER CORPORATION

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the oil industry, provided the ideal manufacturing condition could be maintained, which, of course, it could not be.

Electrical Motors

The survey on electrical motors revealed stocks of 4243 motors ranging from 26 horsepower up and of this total 2255 were in the 26 to 50 horsepower range, leaving 1988 in the range of 51 horsepower up. These motors must be used to supply not only the oil industry's needs but the needs of all other industries in addition.

From a standpoint of capacity to manufacture, it was found that manufacturers of motors could turn out daily within the range of 26 horsepower and above a total of 355 motors daily of which 105 were from 26 to 50 horsepower. These motors must also take care of general industrial demand.

The capacity to produce motors of less than 25 horsepower is apparently unlimited.

Pumping Units

Replies to the questionnaire and estimates on some few companies which did not supply the requested figures indicate stocks on hand in June of 648 individual pumping units of all types and sizes. (It is interesting to note that this figure is within 25 of the number of such units in stock according to an Oil Weekly survey at the close of 1932).

The sizes considered (polished rod loads) were classified into five different groups: up to 10,000 pounds; 11,000 to 15,000 pounds; 16,000 to 20,000 pounds; 21,000 to 25,000; and over 25,000 pounds.

Rig fronts were not included in these figures.

Replies received to the questionnaire and estimates from those who did not reply indicate a daily capacity of 108 with plants working to maximum production. However, many manufacturers pointed out that if they turned their entire plants to the problem of producing pumping units they would do so at the expense of other manufactured articles on which they have good demand.

This "100 percent" figure of 108 units is more susceptible to a reduction from a practical standpoint than any of the figures The Oil Weekly received and individual conferences with manufacturers bore out this feeling. A careful study of the individual replies received indicates to The Oil Weekly that actually the production with plants working at a normal high rate of speed and taking into consideration other demands, could produce in the course of a year less than 15,000 units of all sizes.

Central Powers

Stocks of central powers totaled 38 in June with a daily capacity to produce 17 per day but if the 17 powers are produced per day then the production of individual pumping units on the part of some manufacturers would be drastically reduced.

The ability to get gears, heavy duty bearings and shafts materially affected delivery back in 1933 and could do so again.

Sucker Rods

Apparently, the sucker rod industry is in an excellent position to take care of the normal or even abnormal demand in the oil industry. Stocks on hand in June totaled 10,655,000 feet and a daily capacity of 480,000 feet was indicated. In 1928 annual sales of sucker rods by American manufacturers including export totaled in excess of 27,000,000 feet.

Of course, sucker rod manufacturers find a bigger replacement market on wells already equipped than would be the case of any of the manufacturers hitherto considered.

Sucker rod stocks on hand included 3,415,000 feet of 5/8-inch diameter; 5,300,000 feet of 3/4-inch and 1,940,000 feet of 7/8-inch.

Summary

The study we have made of the ability of manufacturers to take care of the oil industry's demand for pumping equipment indicates beyond any question that the manufacturers are well set up to take care of not only the current demand but of a material increase.

However, manufacturer after manufacturer pointed out that *this ability to take care of the industry's needs depended on close cooperation between manufacturer and oil man.*

Back in 1933, orders to equip about 3000 wells in East Texas resulted in an immediate slow down in delivery and chaotic conditions in manufacturing plants. At that time the manufacturers were just beginning to come out of the depression and had badly depleted plants personnel. Also some of them had been forced to allow their equipment to deteriorate. Since that time increasing demand has given them better organized personnel and many have materially improved their plants.

But one large manufacturer, when asked what would happen if orders to equip 3000 wells were dumped on the industry within a 60-day period, said that in his opinion, if it came without notice, 1933 conditions would be repeated.

This entire survey was developed with the idea of giving the oil industry an accurate picture of what it can expect and certainly *the outstanding thing that has come to our attention from the manufacturers is the necessity that the manufacturers shall be advised in so far as possible as to the requirements of oil companies.*

Possible Demand

Many manufacturers in responding to the questionnaire asked if The Oil Weekly saw any strong likelihood of a sudden surge in pumping equipment buying. Our reply has been that we saw no sudden surge in sight but that it is quite evident from all of the factors considered that pumping equipment purchases within the next twelve months will be materially greater than they have been during the past 12 months. There is a strong possibility that such demand may be from 50 to 100 percent greater.

One thing that cannot be escaped is the ultimate necessity of equipping wells now flowing in addition to taking care of necessary replacements and the further necessity of taking care of those wells which will be completed as pumpers from month to month in the future.

Removal of Scale

THAT FORMS ON THE TUBING, RODS AND PUMPS A SERIOUS PROBLEM AT MEXIA

By BRAD MILLS, Associate Editor

FORMATION of a hard scale on tubing, rods and pump parts presents a very serious problem in the Mexia, Texas, district. This scale in its worst form builds up in the tubing, liner and working barrel and soon prevents the successful operation of pumping wells. No successful method for removing the accumulation from the tubing has been developed, and even after pulling the tubing string from the well, removal of the scale is a difficult and expensive task.

Accumulation of the scale has been confined to the lower 250 feet of hole, the section that is in constant contact with the hard and brackish water found in the district. The scale also affects equipment in wells producing at a certain rate, those yielding from 25 to 150 barrels of fluid being especially susceptible to attack. Above and below the critical production rates, the scale does not form rapidly in the tubing or on pump parts. Formation of the scale under certain conditions indicates that temperature and the movement of fluid in the hole affect the action of the minerals in the water.

Many wells in the Mexia district originally produced clean oil, but water encroachment during the past few years has been rapid. More than 94 percent of the fluid lifted to the surface in the Mexia area is water, the encroachment having been rapid in a few sectors during the past few years.

Rate of Accumulation Increasing

The formation of scale became a problem about three years ago and the rate of accumulation has been increasing steadily since that time. The first scale that formed was not as hard as much of the current deposits, and it was possible to remove the early accumulations with acid. Unusual or freak conditions in many wells have caused the formation of scale that is as hard as slate or rock. The formation has been so heavy in a number of pumping wells that removal of the scale even after pulling the tubing has been a serious problem.

The scale is formed when metal near the bottom of the hole comes in contact with the water in the producing formation. In the field the water is commonly called "gyp" water, since it supposedly contains a high percentage of gypsum. Its formation on iron under certain conditions is not fully understood.

An analysis of the hard scale removed from tubing reveals the reasons for the difficulty experienced in removing the deposits. The scale is composed of calcium carbonate, barium sulphate, iron, aluminum and silica. The accumulation is very hard, closely cemented and about as heavy as slate. Some of the scale found in the district shows a high percentage of lime.

The scale forms on both the outside and inside of tubing, and it is not unusual for the double deposits to become twice as thick as the tubing. The accumulation near the bottom of the hole is fairly uniform, but a tapering effect is noticed as the critical level is approached about 250 feet from bottom.

The rate of deposition in various wells is not constant, and this fluctuation has been very difficult to explain. The scale will accumulate rapidly for a time, only to be entirely checked for a period by some force or condition not understood. The accumulation of scale moves around from one section of the district to another, the temperamental attitude of the minerals in the water being caused apparently by slight changes in temperature in the formation. A study of the shifting nature of the scale formation indicates that a critical temperature is required to accelerate the deposition, and that when the temperature changes from the required range, the accumulation is arrested.

Scale Forms in Layers

By breaking a piece of the scale, it is easy to see that the accumulation has taken place by layers. The rings or laminations making up the full thickness of the scale strongly resemble the rings of a tree. These layers range in color from a very light gray to an almost black slate, and it is not unusual for a very light layer to follow on top of an almost black layer of scale. The entire scale thickness is closely cemented and forms an integrated deposit that may range from 1/64 to ¼ of an inch thick. It is similar in texture to slate or fine rock.

The scale forms on the bottom section of the rod string, but the average deposit is thinner than that on the tubing, liner and submerged equipment that have no movement. The accumulation does not seriously weaken the rod string as corrosion does, but the greater diameter and increased weight cause trouble. The stress and strain on rods also help to arrest the accumulation of scale.

It is not unusual for a liner to become so heavily coated that the tubing can not be run. The scale builds up in the working barrels in some cases so that it sticks the plunger. It is often necessary to pull both the rods and tubing to release the rods.

The accumulation of the scale on the outside of the liner retards the flow of fluid in the hole. It has been necessary in several wells to cut the liners piece by piece before they could be pulled through the casing. In addition to the scale, the shale and sand had packed behind the liners to freeze them tighter.

Short barrels are used in all wells so that the plunger travels the full length of the barrel. This movement gives a washing and friction action that prevents the formation of scale on the barrels. If the plunger stroke is shorter than the stroke, the scale builds up above and below to form bottle necks, thus trapping the plunger in the barrel and shutting off the flow of fluid.

The scale builds up around the gas anchor, both inside and out, until the opening may be no larger than a lead pencil. The accumulation on this piece of equipment has been especially heavy and troublesome in many wells.

Where the scale runs strongly to lime, it has been possible to break it down with acids, but the harder deposits are not affected by acid solutions unless they are made strong enough to attack and seriously damage the metal itself.

Abrasive and Knife-Like Action

Where ordinary cups are used, they stay in service an average of only 18 days. The scale shows an abrasive and knife-like action that rapidly reduces the cups to shreds. Other types of pumps also are quickly affected by the scale, since the accumulation reduces the size of tubular parts that were precision machined in the beginning. It usually is better to pull the pumps at the first sign of trouble than to await outright failure of the pumps to deliver fluid to the surface.

Special chrome balls and seats are used. Ordinary balls and seats remain serviceable less than two weeks in wells that are badly affected by the scale. The action on these pump parts, however, is partially caused by corrosion.

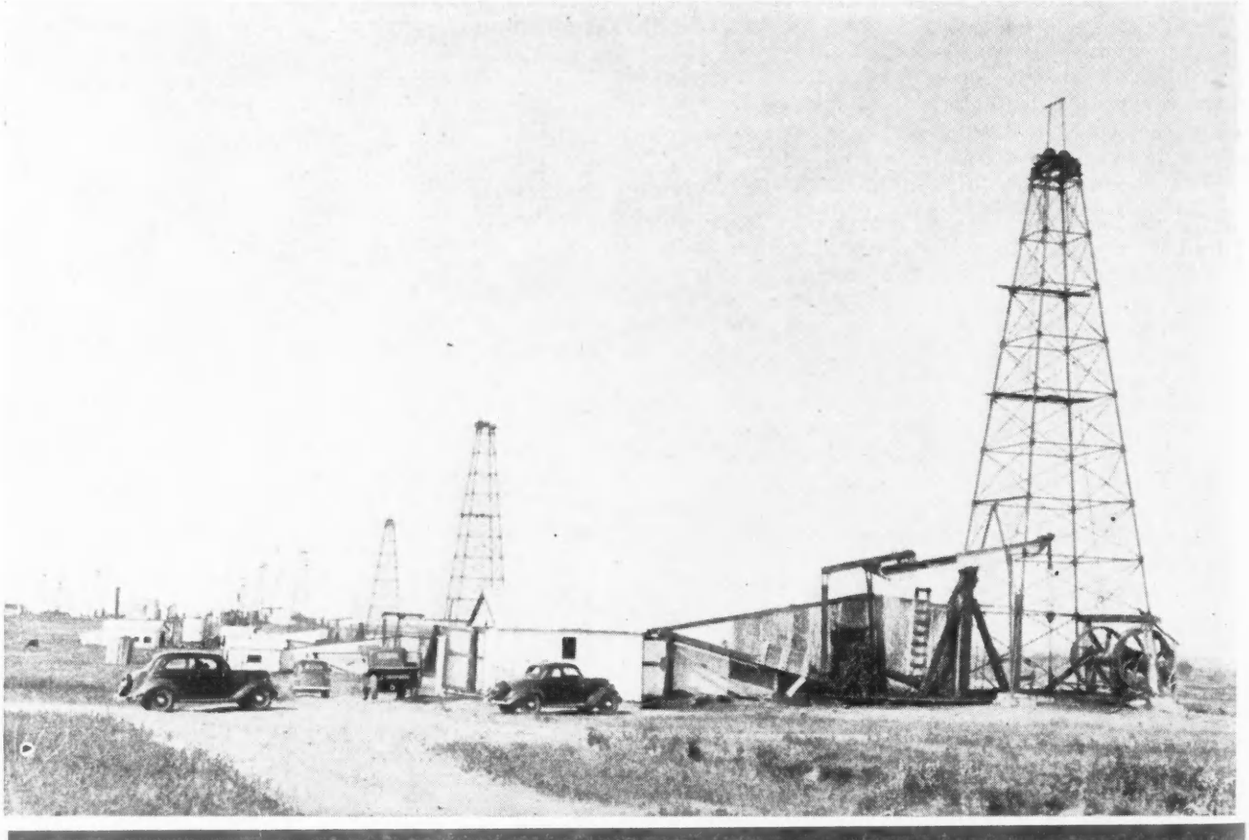
The small wells are pumped with 5/8-inch rod strings and two-inch tubing, while the larger wells are pumped with 3/4-inch rods and 2½-inch tubing.

Salt deposits in surface equipment give considerable trouble. In traps and lead lines the accumulation builds up as the salt cools. The accumulation of salt also affects the rods and tubing only in the upper 200 feet of the hole.

Paraffin is a problem in many wells, but the deposits extend only from the surface to a depth of 250 feet. Steam and paraffin solvents are used effectively, but pulling the tubing has been found almost as economical. It is necessary to repeat steaming operations every 30 to 45 days. Paraffin gives most trouble in wells producing a small amount of water, the warm water in many wells serving as a cleansing agent.

Engineers and chemists for three years have been attempting to find a solvent that would effectively remove the hard scale from tubing, rods, gas anchors, lines and pumping equipment without injury to the metal. The hard coating is almost impervious to chemicals that dissolve the softer lime deposits. Even after pulling tubing and other equipment, the removal of scale presents an expensive problem.

Although the Mexia district produces 94 percent water, and is troubled with a serious scale forming condition, the surface equipment is very well maintained.



Markets Improve

GASOLINE TANK CAR PRICES HIGHER WITH DEMAND HEAVY

THE markets continue to improve last week. Gasoline tank car prices showed some tangible gain, as minimum quotations advanced one eighth-cent a gallon on the third grade in Oklahoma and North Texas. Meanwhile, similar gains seemed a possibility in the other sections of the Mid-Continent. Demand has continued heavy, following the large volumes of business enjoyed during the Independence Day holiday period.

In some quarters it is predicted that the weeks just ahead will bring the strongest gasoline market so far experienced this year.

Lending weight to these predictions is the fact demand is fulfilling the most optimistic expectations, while strict control of crude production is holding current supply closely in line with market requirements. The rigid control of crude output is scheduled to continue at least through July, and there are fair prospects that similar strict regulation will be extended also through August.

Gasoline Demand Large

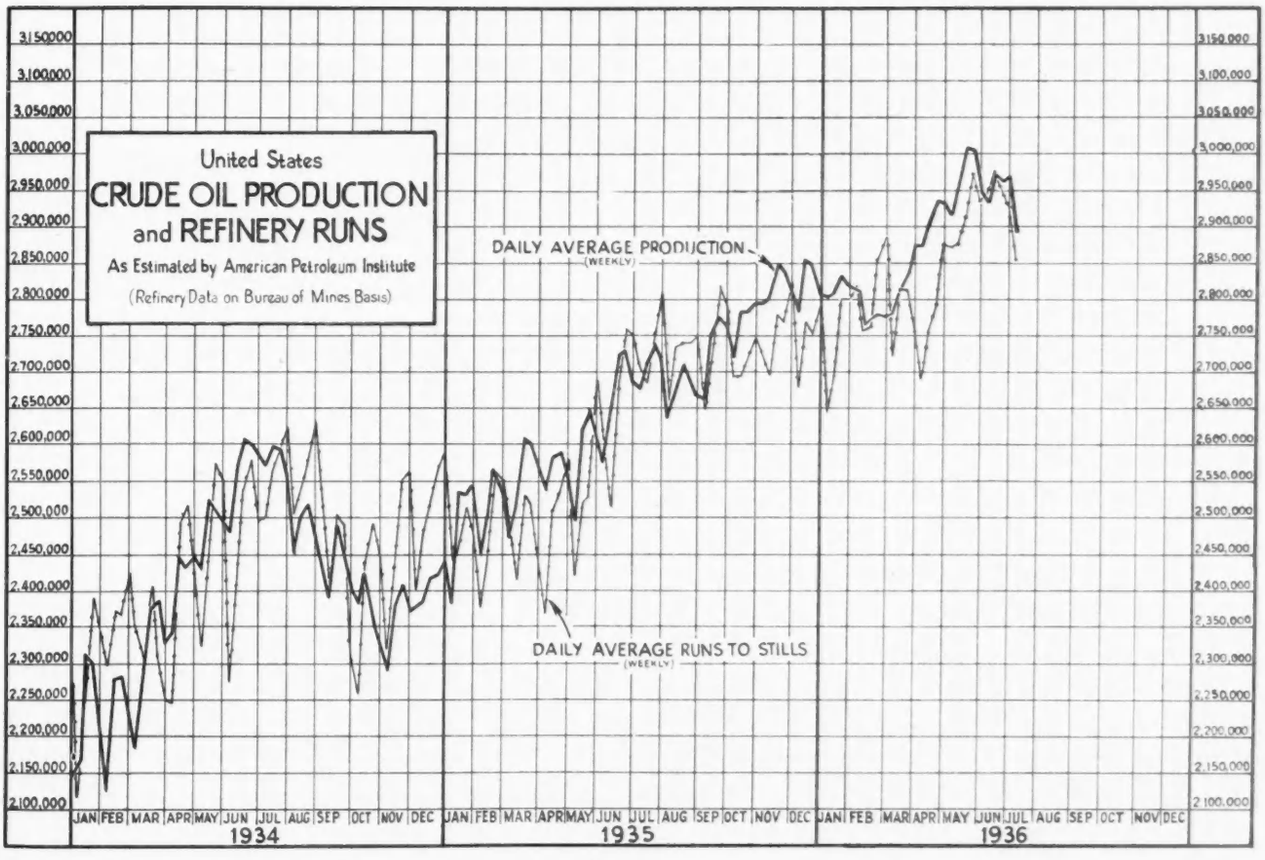
Earlier this year considerable anxiety was felt over the unusually large inventories of gasoline, but it now appears that the stocks are not greatly out of line with the present high rates of consumption. The present stocks of gasoline are somewhat more than 14 percent greater than at this time last year. But gasoline demand this year has been running nearly 10 percent ahead of last year, and in recent weeks the consumption has been particularly encouraging.

A source of some disappointment, however, is the comparatively poor showing made lately by the kerosene market. Last week brought some further weakening of kerosene prices. The market quite obviously has begun to reflect the extreme drought in the Middle West. Not only kerosene and tractor fuels but also motor fuel have encountered lower consumption, and the adverse effects of the heat and dry weather are expected to continue. Some of the farm lands are not being harvested because of the drought, and farming activities have decreased generally in the wide region affected.

Inquiries have not increased perceptibly for light fuel oils for immediate shipment or for subsequent delivery, and prospective buyers still are generally unwilling to pay the prices that generally prevail in contemplating purchases for storage.

Third Grade Higher

Concrete evidence of a stronger gasoline market was offered in the fact that the lowest price prevailing on the third grade U. S. motor gasoline, below 62 octane, f.o.b. Oklahoma refineries late last week was 4⅞ cents a gallon as compared with 4¾ cents a week earlier. The top price remained at 5 cents. On the higher octane gasolines the price remained unchanged, that from 63 to 67 octane being quoted at 5⅜ to 5⅝ cents, and the 68 to 70 octane material at 6 to 6⅛ cents. At North Texas refineries, also, the third grade gasoline was up one eighth cent in some instances as the 4⅞ cent price of the previous week was pushed up in some sales to 5 cents. In East Texas, however, there was no improvement, as the fully tendered third grade continued to bring from 4⅝ to 4¾ cents. In that district gasoline production has kept well abreast of the large demand, and prices have not tended to stiffen appreciably. In the Chicago area, also, there was not last week



any change in the prices of gasoline, although the existing prices were steady.

Kerosene tank car prices were one eighth cent lower last week than in the previous week in the Chicago market. The 41-43 water white grade was priced at 3⅜ to 3⅝ cents a gallon, and the 42-44 water white grade at 3⅝ to 3⅞ cents. At Oklahoma refineries the prices on the two grades were unchanged at 3⅝ to 3¾ cents and 3⅞ to 4 cents.

SEEK INCREASE

Oklahoma hike pends other states' results

THAT curtailment of Oklahoma output below the total recommended by the United States Bureau of Mines is on a contingent basis was indicated when W. J. Armstrong, chief conservation officer of the Oklahoma Corporation Commission, sought last week to get continuances on two petitions already set for hearing. One filed by the British American Oil Producing Company, set for July 14, seeks to raise Oklahoma production to the bureau of mines figure of 569,175 barrels daily. Indian Territory Illuminating Oil Company has a petition, set for hearing July 15, which would remove the Simpson zone of the Oklahoma City field from proration.

In his move to get them continued, Armstrong recalled his position when the July figures were set, which was that he would recommend holding to Bureau of Mines figures for August if other southwestern states do not keep in line in holding production below the bureau's estimate in July.

Another reason for seeking the continuance was that it would take several days to hear the evidence in the two cases and that the time then would be too short to change allowables for the remainder of July.

The crude oil situation in Oklahoma thereby seems to be a case of seeing how things turn out in July. If production in Texas, Louisiana and Kansas is consistently under figures recommended by the United States Bureau of Mines, indications are that Oklahoma conservation authorities will continue to write orders to keep the output of that state under what the federal bureau considers adequate.

The subject got over into offices of the Interstate Oil Compact Commission, which is seeking to hold proration orders in line. Calculations by Art L. Walker, secretary, are being made to show that all states have been producing more oil than the Bureau of Mines recommended for the past eight months. Walker said preliminary estimates show that Oklahoma output has been about six percent above the federal recommendation while Texas has been about four percent above the recommended figure.

Walker issued a plea that state conservation bodies hold the production figures down for another month or six weeks. He said:

"Last week the American Petroleum Institute reported a reduction of 76,850 barrels daily in production of 2,892,300 barrels. Along came the bureau of mines and reported a reduction of 1,595,000 barrels in crude oil stocks in the United States for the week ended June 27 which followed a reduction of almost similar amount the week before.

"At the same time crude oil runs are at a high figure but gasoline stocks are being reduced because of the big increase in consumption.

"We've got to do just what California did last autumn if we want to stabilize our market. Out there they took inventory and found that they were producing too much oil and filling too much storage locally. When they had reduced their storage they opened up their wells and everybody was happy."

East Texas Tank Car Shipments

Week Ending July 5, 1936

PRODUCTS	No. Cars	Estimated Gallons
Gasoline	715	5,805,063
Fuel Oil	238	2,203,338
Casinghead Gasoline	245	2,054,141
Distillate	57	455,525
Topped Crude	33	283,047
Gas Oil	26	214,900
Kerosene	26	206,265
Residuum	10	80,975
Naphtha	8	64,740
Total	1,358	11,368,994
Total Previous Week	1,254	10,650,349
Coastwise	550	.....
Interstate	439	.....
Intrastate	369	.....
Total	1,358	.....

BUREAU REPORTS

Natural gasoline output in May continues drop

Washington.—Natural gasoline production continued to decline in May, the daily average output dropping to 4,437,000 gallons against 4,571,000 gallons in April, it was reported by the Bureau of Mines July 8.

Total production during the month, the Bureau announced, was 137,550,000 gallons against 137,130,000 gallons in April, bringing the total for the first five months of the year to 704,214,000 gallons compared with 655,810,000 gallons in the same period in 1935.

Stocks of natural gasoline at the end of the month included 114,156,000 gallons at refineries against 101,514,000 gallons April 30, and 123,732,000 gallons at plants and terminals against 110,922,000 gallons.

The month's production was marked by declines in Texas and Oklahoma, a drop in average production in the Texas Panhandle from 498,500 gallons in April to 482,900 gallons being only partially offset by a daily average of 380,900 gallons in East Texas, the highest ever recorded, it was stated. Production in California held its own despite a decrease at Kettleman Hills.

American farmers own and operate 6,000,000 motor vehicles, 1,000,000 tractors, 300,000 lighting plants, 5000 diesel engines, and large numbers of stationary engines, pumps, and other machinery.

Summary of Wells Completed in the United States Week Ending July 11, 1936

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total Completions 1936	Total Completions this Date 1935
Alabama	....	....	....	....	.....	2	3
Arkansas	3	....	....	3	.....	49	86
California	14	10	1	3	7,345	591	433
Colorado	....	....	....	....	.....	6	6
Illinois	....	....	....	....	.....	4	9
Indiana	....	....	....	....	.....	121	92
Kansas	29	20	1	8	26,985	835	739
Kentucky	....	....	....	....	.....	125	92
Louisiana	24	18	1	5	22,199	555	403
Michigan	23	9	10	4	509	407	249
Mississippi	....	....	....	....	.....	5	12
Montana	4	3	1	....	220	71	67
New Mexico	19	19	....	....	34,018	301	146
New York	....	....	....	....	.....	....	....
Ohio	35	15	10	10	105	1,011	776
Oklahoma	78	66	....	12	221,020	1,540	1,239
Pennsylvania	....	....	....	....	.....	....	70
Texas	252	183	8	61	300,343	6,530	6,413
Utah	....	....	....	....	.....	....	....
West Virginia	15	3	11	1	7	380	263
Wyoming	3	3	....	....	1,206	32	34
Florida	....	....	....	....	.....	1	....
Total this week	499	349	43	107	613,957	12,566	11,133
Total last week	455	319	33	103	668,817	....	....
Total this year	12,566	8,359	1,207	2,990	12,153,862	....	....

Comparison of Permits Granted for New Wells

STATE	Week Ending July 11	Total this Mo.	Total this Year	Total this Date Last Year	1935 Year Total
Arkansas	...	...	51	17	70
California	18	45	508	506	925
Louisiana	20	41	652	432	846
Kansas	39	78	968	532	1,204
Michigan	28	42	389	266	749
Oklahoma	55	101	1,257	1,169	2,311
Texas	310	633	7,916	5,767	10,800
Total	470	940	11,741	8,688	16,964

PRODUCTION RISES

Output increases as most big states record gaines

UNITED STATES crude oil production was higher last week than in the previous week, as increases were registered in most of the leading producing states. For the weekly period ended July 11 the nation's crude output averaged 2,943,080 barrels daily. That was 57,880 barrels a day more than in the previous week, and 25,880 barrels a day more than the recommendation of the Bureau of Mines for July.

Output was higher than in the previous week in California, Oklahoma, Kansas, Louisiana, and New Mexico. In Texas the production was hardly changed, showing a decrease of 1200 barrels daily.

California last week averaged 582,000 barrels a day, or 14,000 barrels a day more than in the preceding week, and the state's output was more than 30,000 barrels a day above the Bureau of Mines recommendation. However, California normally shows higher output at the beginning of each month than later in the month.

Oklahoma production averaged 546,525 barrels daily last week, having increased 37,875 barrels from the rate in the previous week. The new rate was 23,275 barrels a day under the federal allocation.

Louisiana's output of 225,800 barrels daily last week was about 3500 barrels a day higher than in the previous week, and it was 39,000 barrels a day above the federal allocation.

New Mexico averaged 73,100 barrels a day last week, or 100 barrels a day more than in the previous week and 3700 barrels a day more than the federal quota.

Kansas output last week averaged 144,755 barrels a day. That was five barrels a day more than in the previous week and 19,445 barrels per day less than the Bureau of Mines recommendation.

Texas production of 1,134,900 barrels daily was 1200 barrels a day less than in the previous week, and 11,600 barrels a day less than the federal allocation.

STOCKS DECLINE

Washington, D. C.—Stocks of domestic and foreign crude petroleum at the close of the week ending June 27 totaled 310,749,000 barrels, according to data compiled by the Bureau of Mines for Harold L. Ickes, secretary of the interior. Compared with the figures of the previous week, this total represents a decrease of 1,595,000 barrels, comprising a decrease of 1,797,000 barrels in stocks of domestic crude but an increase of 202,000 barrels in stocks of foreign crude. Of the decrease in domestic stocks, 958,000 barrels occurred in California.

Current reports of the industry for the week ending June 27, in comparison with the previous week, indicate that crude oil production remained virtually unchanged at a daily average of about 3,050,000 barrels.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in July)	ACTUAL PRODUCTION: BARRELS DAILY FOR WEEK ENDING July 11	June 27
TEXAS—			
Texas Panhandle		61,600	61,800
North Texas		59,000	58,900
West Central Texas		25,200	25,000
West Texas		179,800	177,800
East Central Texas		52,900	51,400
*East Texas Field		425,800	427,100
†South Texas		83,900	84,600
†Texas Gulf Coast		246,700	249,500
*Total Texas	1,146,500	1,134,900	1,136,100
OKLAHOMA—			
Oklahoma City		145,750	106,600
Seminole Area		136,875	138,900
Tatums		3,075	3,050
Lucien		12,750	12,650
Fitts		43,300	43,650
Edmond		12,050	10,000
Others		192,725	193,800
Total Oklahoma	569,800	546,525	508,650
KANSAS—			
Ritz-Canton		6,075	6,650
Voshell		3,000	2,850
Nikkel-Hollow		3,875	3,800
Sedgwick		5,350	5,250
Burrton-Haury		13,400	11,550
Lorraine		3,950	6,100
Oxford		3,750	5,225
Others		105,375	103,325
Total Kansas	164,200	144,755	144,750
LOUISIANA—			
North Louisiana		79,700	76,125
Louisiana Gulf Coast		146,100	146,200
Total Louisiana	186,800	225,800	222,325
ARKANSAS	31,300	29,300	29,375
CALIFORNIA—			
Long Beach		67,500	65,400
Santa Fe Springs		44,000	42,500
Huntington Beach		37,000	34,500
Dominguez		26,000	26,000
Inglewood		11,500	12,000
Ventura Avenue		33,500	33,500
Seal Beach		8,000	7,500
Midway-Sunset		61,000	63,000
Elwood		12,000	12,500
Kettleman Hills		76,500	79,000
Mountain View		26,500	27,500
Playa del Rey		12,500	12,500
Others		166,000	152,000
Total California	550,800	582,000	568,000
MOUNTAIN STATES—			
Wyoming	38,800	37,000	36,400
Montana	13,400	16,900	16,800
Colorado	4,700	5,100	4,900
Total Rocky Mountain States	56,500	59,000	58,100
NEW MEXICO	69,400	73,100	73,000
EASTERN STATES	107,700	110,500	110,400
MICHIGAN	33,800	37,200	34,500
*Total United States	2,917,200	2,943,080	2,885,200
*Surreptitiously produced oil in East Texas, not included in above figures, estimated at		15,000	15,000
Grand Total, including surreptitious production		2,958,080	2,900,200

†Coastal section of South Texas is included with Texas Gulf Coast.

Crude Runs to Stills; Stocks of Finished and Unfinished Gasoline and Gas and Fuel Oil, and Cracked Gasoline Production, Week Ended July 4, 1936

(Figures in thousands of barrels of 42 gallons each as reported to American Petroleum Institute)

DISTRICT	Daily Refining Capacity			Crude Runs to Stills		Stocks of Finished and Unfinished Gasoline				Stocks of Gas and Fuel Oil			Daily Charging Capacity of Cracking Units			Cracked Gasoline Production
						Finished										
	Potential Rate	Reporting		Daily Average	% Operated	At Refineries	Terms. Trans. Pipe Lines	Unfinished in Naphtha Distillates	Total Finished and Unfinished	Gas, Oil & Distillate	Residual Fuel Oil	Total	Potential Rate	Reporting		Daily Average
		Total	%											Total	%	
East Coast	612	612	100.0	506	82.7	6,657	11,362	857	18,876	4,735	5,055	9,790	534	534	100.0	107
Appalachian	154	146	94.8	97	66.4	1,208	1,005	290	2,503	286	179	465	79	78	98.7	26
Ind., Ill., Ky.	462	444	96.1	411	92.6	5,938	2,709	856	9,503	2,264	2,072	4,336	349	348	99.7	127
Okla., Kans., Mo.	453	384	84.8	286	74.5	3,883	2,027	570	6,480	765	2,616	3,381	256	228	89.1	65
Inland Texas	330	160	48.5	102	63.8	1,090	174	180	1,444	337	1,433	1,770	148	105	70.9	27
Texas Gulf	680	658	96.8	515	78.3	4,973	216	1,997	7,186	3,937	3,645	7,582	399	393	78.5	151
Louisiana Gulf	169	163	96.4	141	86.5	800	586	241	1,627	1,127	997	2,124	77	74	96.1	30
North La.,—Ark.	80	72	90.0	44	61.1	197	108	108	413	72	338	410	46	44	95.7	9
Rocky Mountain	97	60	61.9	48	80.0	1,235	.....	101	1,336	157	608	765	46	39	84.8	12
California	852	789	92.6	515	65.3	9,337	2,402	1,201	12,940	.....	.....	71,729	280	280	100.0	67
Reported	.....	3,488	89.7	2,665	76.4	35,318	20,589	6,401	62,308	.....	.....	102,352	.....	2,123	95.9	621
Estimated Unreported	.....	401	....	190	....	3,033	1,425	274	4,732	.....	.....	2,941	.....	91	....	39
*Estimated Total U.S. July 4, 1936	3,889	3,889	....	2,855	....	38,351	22,014	6,675	67,040	.....	.....	105,293	2,214	2,214	....	660
*Estimated Total U.S. June 27, 1936	3,889	3,889	....	2,930	....	39,504	22,217	6,720	68,441	.....	.....	105,285	2,214	2,214	....	670
U.S.B. of M., July 1935	.....	....	....	2,739	....	†30,550	†19,922	†5,974	†56,446	.....	.....	†108,322	.....	....	....	602

*Bureau of Mines basis currently estimated. †As of July 31, 1935.

OIL AS A CROP

Is worth $200,000,000 per year to farmer

Recent studies of the American Petroleum Institute have disclosed that oil taken from beneath farms provides income of approximately $200,000,000 annually for American farmers. It is estimated that the value of the underground "oil corp" exceeds the income from all the above-ground crops of rye, barley, buck-wheat, rice, flaxseed, sweet potatoes, and hops produced in this country.

STOCKS TO GO UP

Foreigners agree to abide by Japan's new oil law

In compliance with the Japanese law requiring oil companies in business in Japan to keep on hand a six-month supply of imports, Standard Vacuum Oil Corporation and Rising Sun Petroleum Company, the latter an affiliate of Royal Dutch Shell, have agreed to build up stocks in Japan. The decision, which has been delayed by opposition to Japan's oil law, was simplified through a recent vote of the Japanese Diet to help defray expenses of additional tankage that will have to be erected to take care of the law's provisions. While the law became effective July 1, it was understood the government is willing to take cognizance of the fact that it would have been a physical impossibility for the two companies named above to have finished erection of the required tankage by that date. The decision brings to a close two years of controversy which at one time appeared likely to result in the withdrawal of Standard Socony and Rising Sun interests from the island empire.

MORE FUEL OIL USED

Public utility plants increased by 9.2 percent the consumption of fuel oil used in generating electric power in 1935. First class railroads increased about by 6.7 percent the consumption of fuel oil for railroad purposes.

Preliminary reports of the U. S. Geological Survey indicate that 11,329,000 barrels of fuel oil were consumed in producing 11,375,000,000 kilowatt-hours of electricity in 1935, or 11.5 percent of total output. Interstate Commerce Commission records show that first class railroads consumed 1,978,075,249 gallons of fuel oil in 1935.

COMPACT MEETING

Governor Marland of Oklahoma has invited by letter governors of 21 oil producing states to attend or send representatives to the regular meeting of the Interstate Oil Compact Commission, at the Baker Hotel, Dallas, July 31. Six states, Oklahoma, Kansas, Texas, Illinois, New Mexico and Colorado are members of the commission, of which Marland is president. The meeting was called on the invitation of Governor Allred of Texas. Sub-committee meetings on July 29 are to be followed by meetings of the major committees on the following day. All delegates have been invited to a barbecue at the home of W. R. Boyd, Jr., executive vice president of A. P. I. in Freestone County.

GASOLINE FROM BITUMEN

First unit of a plant for refining gasoline and other products from McMurray bitumen will be constructed at once and commence production in mid-August, according to an announcement in Edmonton, Alberta, Canada, by R. C. Fitzsimmons, president of the International Bitumen Company. The firm is the first commercial producer of McMurray bitumen in northern Alberta.

URUGUAY REFINERY

National Administration of Combustibles, Alcohol and Portland of Uruguay expects to complete and have in production by the end of 1936 the refinery being built at La Teja, Uruguay, which will supply domestic needs of the country for petroleum products of all classes.

CRUDE OIL PRICE QUOTATIONS

(Figures Represent Basic or Flat Prices—Revised to July 11, 1936)

DISTRICT	Low Grav.	Dif.	High Grav.	Date
Oklahoma-Kansas	28—$0.94	2¢	40—$1.18	1- 9-36
N. and N.-C. Texas	28— .84	2¢	40— 1.08	1- 9-36
Texas Panhandle				
Gray County	34— .86	2¢	40— .98	1- 9-36
Carson-Hutchinson	34— .81	2¢	40— .93	1- 9-36
West Texas				
Ector, Pecos, W'kler Crane, Upton, Howard and Glasscock	29— .76	2¢	36— .90	1-14-36
West Central Texas	28— .84	2¢	40— 1.08	1- 9-36
East Central Texas	28— .91	2¢	40— 1.15	1- 9-36
East Texas	*1.15			1- 9-36
Talco	* .60			4-15-36
Texas Gulf Coast				
Anahuac-Dickinson	30— 1.04	2¢	40— 1.24	1- 9-36
Conroe	35— 1.24	2¢	40— 1.34	1- 9-36
Tomball	*1.30			1- 9-36
Cleveland	*1.00			1-11-34
†Goose Creek, Hull Liberty, Orange, Pierce Junction, Moss Bluff, Raccoon Bend, Sour Lake, Spindletop, Sugarland, West Columbia, Humble, Rabbs Ridge	Below 17— .88	2¢	34— 1.22	1- 9-36
South and S. W. Texas	Below			
Refugio (Light)	17— .88	2¢	34— 1.22	1- 9-36
Refugio (Heavy)	*.90			1- 9-36
Saxet	*.90			1- 9-36
Mirando	*.85			1- 9-36
Pettus	*1.25			1- 9-36
Salt Flat	*.97			1-14-36
Darst Creek	*.97			1-14-36
Placedo (Heavy)	*.85			4- -36
Placedo (Light)	*.95			4- -36
Port Lavaca	*.97			
Plymouth	*.90			12-17-35

* All gravities—flat rate.
† Gulf Coast prices as posted by Humble Oil & Refining Company.

DISTRICT	Low Grav.	Dif.	High Grav.	Date
Arkansas				
El Dorado (Light) and Rainbow	25— .78	2¢	40— 1.10	1-10-36
El Dorado East Field and Smackover	*.75			1-10-36
North Louisiana	25—$0.78	2¢	40—$1.10	1-10-36
Urania	*.97			1-10-36
South Louisiana	Below			
Lockport	19— .92	2¢	34— 1.22	1- 9-36
Iowa, Cameron Mds.	Below 19— .82	2¢	34— 1.12	1- 9-36
Rocky Mountain States				
Salt Creek	29— .94	2¢	40— 1.18	1-10-36
Elk Basin	*1.28			1- 9-36
Grass Creek (Light)	*1.28			1- 9-36
Grass Creek (Heavy)	*.58			1- 9-36
Big Muddy	*1.11			1- 9-36
Rock Creek	*1.12			1- 9-36
Sunburst	*1.15			6- 5-36
Lance Creek	*.90			1- 9-36
Osage	*1.08			
Cat Creek	*1.07			8-25-33
Cut Bank	*1.35			6- 3-36
Pondera	*1.05			9-29-33
Hog Back, N. M.	*1.00			9- 8-33
Lea County, N. M.	*.75			9-29-33
Mid-West States				
Lima	*1.25			1-10-36
Illinois	*1.23			1- 9-36
Princeton	*1.23			1- 9-36
Western Kentucky	*1.23			1- 9-36
Pennsylvania				
Bradford	*2.45			1-13-36
Sw. Pa. Pipe Line	*2.17			1-13-36
Eureka Pipe Line	*2.12			1-13-36
Buckeye Pipe Line	*1.97			1-13-36
Corning Grade	*1.42			1-13-36
Michigan				
Central Michigan	*1.42			6-15-36
Muskegon	*.70-1.00			12-31-32
Canada				
Petrolia	*2.10			9- 9-33
Oil Springs	*2.17			9- 9-33

* All gravities—flat rate.
‡ Average price, all oil sales being to small refineries.

MAJOR PRICE CHANGES

	Penna. (Nat. Tr.)	Mid.-Cont. (36 Gr.)	Calif. (26 Gr.)
June 19, 1933	Up 10	Up 19	.....
June 26, 1933	Up 10	.....	Up 9-12
July 6, 1933	Up 13	Up 10	.....
July 17, 1933	Up 15	.....	.....
July 28, 1933	Up 15	.....	.....
August 11, 1933	Up 10	.....	.....
August 24, 1933	.....	Up 10	.....
August 30, 1933	Up 15	.....	.....
September 6, 1933	Up 10	Up 10	Up 15
September 8, 1933	.....	Up 15	.....
May 1, 1934	Up 10	.....	.....
November 6, 1934	Cut 25	.....	.....
December 6, 1934	Cut 25	.....	.....
January 4, 1935	Up 15	.....	.....
February 4, 1935	Up 15	.....	.....
May 16, 1935	Cut 15	.....	.....
June 26, 1935	Cut 15	.....	.....
July 16, 1935	Cut 10	.....	.....
August 29, 1935	.....	.....	Cut °4
September 6, 1935	Up 5	.....	.....
October 29, 1935	Up 15	.....	.....
November 1, 1935	.....	.....	Up °28
November 18, 1935	Up 15	.....	.....
December 6, 1935	.....	.....	Up °9
January 9, 1936	.....	Up 10	.....
January 13, 1936	Up 15	.....	.....
February 26, 1936	.....	.....	Up '5

CRUDE PRODUCTION TAXES

Oklahoma—Five percent of gross value less royalty interest.

Texas—Two cents or 2 percent, whichever is higher.

Louisiana—From four to 11 cents a barrel, depending upon gravity.

Arkansas—2.6 percent of gross market values.

Montana—Two percent of gross value at well and ⅛ of 1c per barrel.

Wyoming and New Mexico—Production tax based upon state and county assessments.

California—.66443 mills per barrel of oil produced and 17.39 cents per acre on proved oil lands.

* All gravities—flat rate.
° Signal Hill 26 gravity.
' Seal Beach 26 gravity.

CALIFORNIA OIL PRICES

(All gravities above those quoted take highest prices of that field. Effective February 26, 1936)

Gravity	Signal Hill	ea Beach Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canyon	Athens Rosecrans	Elwood Terrace	Torrance	Richfield	Whittier East Coyote La Habra	Montebello	West Coyote Hills	Santa Fe Springs	New Hall McKittrick Kern River Round Mountain	Mountain View	Midway-Sunset Buena Vista Hills Elk Hills	Lost Hills	Coalinga	Wheeler Ridge
14-14.9	$.80	$.79	$.78	$.79	$.80	$.76	....	....	$.80	$.76	$.76	$.77	$.78	.....	$.70	....	$.70	$.70	$.70	....
15-15.9	.80	.79	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	.....	.70	....	.70	.70	.70	....
16-16.9	.80	.79	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	.....	.70	....	.70	.70	.70	....
17-17.9	.80	.79	.78	.81	.80	.76	....	....	.80	.76	.76	.77	.78	.....	.70	....	.70	.70	.70	....
18-18.9	.80	.79	.78	.84	.80	.78	....	....	.82	.76	.76	.77	.78	.....	.70	....	.70	.70	.70	....
19-19.9	.82	.79	.82	.87	.84	.81	....	....	.85	.76	.78	.77	.78	.....	.70	$.70	.74	.74	.71	$.70
20-20.9	.85	.79	.85	.90	.88	.84	....	....	.88	.78	.82	.77	.80	.....	.....	.70	.78	.78	.72	.70
21-21.9	.88	.79	.89	.93	.93	.88	....	....	.91	.80	.85	.77	.84	.78	.....	.73	.82	.82	.74	.70
22-22.9	.92	.82	.92	.96	.98	.92	....	....	.93	.84	.89	.79	.88	.78	.....	.77	.87	.86	.78	.72
23-23.9	.95	.86	.96	.99	1.02	.96	$.84	....	.96	.88	.93	.82	.92	.78	.....	.80	.92	.90	.82	.76
24-24.9	.99	.91	1.00	1.02	1.06	.99	.88	....	.99	.91	.96	.85	.96	.82	.....	.84	.97	.94	.86	.79
25-25.9	1.03	.95	1.03	1.05	1.11	1.03	.93	....	1.02	.95	....	.89	.99	.86	.....	.88	1.01	.98	.90	.83
26-26.9	1.06	1.00	1.07	1.09	1.16	1.06	.98	....	1.05	.98	....	.92	1.03	.90	.....	.91	1.06	1.02	....	....
27-27.9	1.10	1.05	1.11	1.12	....	1.10	1.03	....	....	1.02	....	.96	1.06	.95	.....	.95	1.10	1.06	....	....
28-28.9	1.14	1.10	1.14	1.15	....	1.14	1.07	....	....	1.06	....	.99	1.10	.99	.....	.99	1.15	1.10	....	....
29-29.9	1.17	1.15	1.18	1.18	F.O.B.	1.17	1.12	....	....	1.09	....	1.03	1.14	1.03	.....	1.02	1.20	1.14	....	....
30-30.9	1.21	1.19	1.22	1.21	Pipe	1.21	1.17	F.O.B.	....	....	....	1.07	1.17	1.08	.....	1.06	1.25	1.18	....	....
31-31.9	....	....	....	1.24	Line	1.24	1.22	Ship	Kettleman Hills			1.11	1.21	1.12	.....	1.09	1.29	....	....	....
32-32.9	....	....	....	1.27	....	1.27	1.27	....				1.14	1.25	1.16	.....	1.13	1.34	....	....	....
33-33.9	....	....	....	....	....	....	1.32	$1.28		1.19		1.18	1.28	1.20	.....	1.17	1.38	....	....	....
34-34.9	....	....	....	....	....	....	1.37	1.32	....	1.23	....	1.22	1.32	1.25	.....	1.20	.....	....	....	....
35-35.9	....	....	....	....	....	....	1.42	1.35	....	1.27	....	1.25	....	1.29	.....	....	.....	....	....	....
36-36.9	....	....	....	....	....	....	1.46	1.39	....	1.31	....	1.29	....	1.33	.....	....	.....	....	....	....
37-37.9	....	....	....	....	....	....	1.51	1.43	....	1.35	....	1.32	....	1.37	.....	....	.....	....	....	....
38-38.9	....	....	....	....	....	....	1.56	....	....	1.39	....	1.36	....	1.42	.....	....	.....	....	....	....
39-39.9	....	....	....	....	....	....	1.61	....	....	1.43	....	1.40	....	....	.....	....	.....	....	....	....
40-40.9	....	....	....	....	....	....	1.66	....	....	....	....	1.43	....	....	.....	....	.....	....	....	....

WORLD DEVELOPMENTS and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

DECISION APPEALED

Tropical oil objects to Colombian court decree

Tropical Oil Company, which produces practically all the crude oil recovered in Colombia, South America, has appealed to the supreme court of that nation to reverse a decision of the minister of industry of that country which would force the company to sell oil and its derivatives to the port of Galan, Colombia, at prices quoted in New York.

The minister contends Tropical Oil Company signed a contract August 25, 1919, whereby it assumed the responsibility of constructing a refinery within a period of two years and delivering products at the place of production at prices corresponding with those quoted in New York.

In compliance with the contract, Tropical Oil Company constructed Colombia's only refinery at Barrancabermeja. Then, two kilometers away, it established the river port of Galan on the Magdalena river. The two were connected by a pipe line. Tropical Oil Company is claiming the increase of one centavo per litre in the price above that quoted in New York is justified by transportation expenses through the line for the distance of two kilometers. Colombia's procurer general, on the other hand, claims there can be no legal differentiation between Galan and Barrancabermeja and that the one cent increase in price is without justification.

NO ALARM FELT

Early development of Jap concessions not likely

Conscious of the seriousness of natural obstacles to transporting to market outlets any oil that might be discovered on concessions being explored by Japanese interests in Java, Sumatra, and Borneo, producers who have been supplying most of Japan's petroleum needs refuse to become worried over prospects of losing export business to Japan any time soon.

It has been pointed out by California producers, who have enjoyed a substantial portion of the Japanese business, that Japan's wildcatting is restricted largely to concessions comprised primarily of jungles. In the event the Japanese interest should discover oil in commercial quantities on concessions held in Java, Sumatra, and Borneo, the problem of developing the reserve and arranging for transportation of the production to tidewater would not only call for considerable time but also for much money.

Efforts of Japan to conserve its own resources that might be needed in a national emergency and develop production elsewhere are sponsored by Japan's various ministers—foreign affairs, colonies, war, army, and navy—it is reported.

Mitsui, Mitsubishi, and Sumitomo interests have combined with a capitalization in Japanese money equivalent to about $15,000,000 to function under the new fuel policy of Japan. It is understood expenditures of about $300,000 have been authorized for preliminary work.

One step in the combine involves consolidation of Mitsui Trading Company and Borneo Oil Company, somewhat along the lines of the recent deal resulting in formation of the California-Texas Corporation. Mitsui Trading Company is primarily a marketing company, while Borneo Oil Company is said to hold engineering and geological surveys on concessions the combine will explore.

SHALE UNSUITABLE

Product declared useless for oil production

Tasmanian shale has been declared unsuitable for the production of oil, according to a statement made by one of the ministers of the federal government at the recent close of 18 months investigation into Tasmanian shale as a source of bitumen.

Previously, the government had provided 5700 pounds, nearly $28,500, for investigation in connection with the production of oil from the Tasmanian shale and an additional 500 pounds for experimentation on the production of bitumen from shale.

TO TEST FOR OIL

Wildcat to be located in North Battleford

Pamawala Oil & Gas Company plans to drill a test for oil in the city limits of North Battleford, Saskatchewan, Canada, according to an announcement made by H. F. Neale, secretary-treasurer of the company. If the plans materialize, a rig will be moved from Wainwright field and Charles Mills, formerly active in Lloydminster gas field, will be in charge of operations.

OUTLOOK IS GOOD

Operators' dividend rate reflects confidence

In speaking of increased dividend rates paid by several of the more substantial oil companies headquartered outside the United States, Frank Linge, financial writer of London, England, states: "It is thought that these companies would not have made such generous increases had they felt any anxiety regarding the continued prosperity of the industry."

Shell, Royal Dutch, Burmah Oil Company, Venezuelan Oil Concessions, Mexican Eagle and Canadian Eagle Oil companies, Anglo-Iranian Oil Company and Trinidad Leaseholds, Limited, all paid substantially higher dividends in 1935 than they did in 1934.

CHILE TESTING

Exploration resumed under government

Following an allotment of three million Chilean pesos, about $115,000, testing for oil in the southern territory of Magallanes, Chili, has been resumed after a lapse of four years.

Under direction of the department of mines and petroleum, the program of exploration consists of the following: (a) Continuation of drilling at Punta Prat to a depth of 1800 meters (5992 feet), representing an increase of 500 meters over the previous depth record for exploratory drilling established in that vicinity in 1932; (b) Drilling additional exploratory tests at Tres Puentes; (c) Attempting re-completion of the well R-2, where favorable showings of oil were encountered prior to cessation of activity in 1932; (d) Drilling several tests on Pecket ranch and other points in the neighborhood of Tres Puentes; (e) Drilling a wildcat in the region of Chabunco on a location picked as a result of preliminary geological work.

Little is known of the Chabunco area, but Tres Puentes, sometimes referred to as Punta Arenas, has attracted attention of geologists and petroleum engineers for a number of years. R-2, the well referred to above, was completed by the government in June, 1931, for an initial output estimated at two tons per day of oil having a specific gravity of 0.885. Depth of R-2 was 1180 meters, although the production was believed to be coming from

sandstone between 400 and 600 meters. The paraffin base oil initially obtained from R-2 was at that time believed to be Oligocene.

Punta Arenas, or Tres Puentes, is an anticline located about eight kilometers north of the City of Magallanes. The first drilling resulted from observation of a small oil seepage and several gas seepages near the crest of the anticline which, incidentally, has several local domes. Only two wells have been drilled there: the discovery well, which stopped drilling in Tertiary at 1180 meters, and a dry hole.

A small shipment of crude petroleum from Tres Puentes, Territory of Magallanes (Strait of Magellan), has arrived at the refinery at Vina del Mar, near Valparaiso, according to word received from Santiago, Chile. The shipment will be refined into gasoline.

NEW OIL RESERVES
Argentine Government's efforts are successful

Argentina's minister of agriculture reports that recent drilling at greater depths than previously attempted in Commodoro Rivadavia field has proven existence of additional reserves there. He also states exploratory efforts of Yacimientos Petroliferos Fiscales, the government's organization for producing, refining and marketing oil, are meeting with success in the "Gulf of San Jorge oil zone" in the Territory of Chubut.

RUSSIA BUYS
Purchases largely drilling and refining equipment

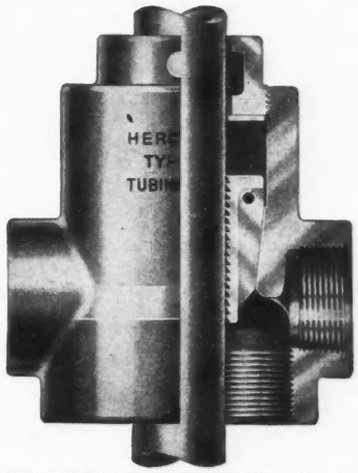
In connection with the prolonged visit of M. Barinoff, chief commissioner of the Soviet oil industry, it is reported in New York, export headquarters for many American oil equipment manufacturers, that purchases of equipment in this country by the Soviets during Barinoff's stay probably will amount to $15,000,000. Payment for the equipment, consisting largely of drilling and refining machinery and items, will be made in gold, it is said.

Rigs purchased will consist of those designed for depths ranging from 7000 to 10,000 feet, while the refinery equipment, according to the report, will consist largely of cracking units of advanced type.

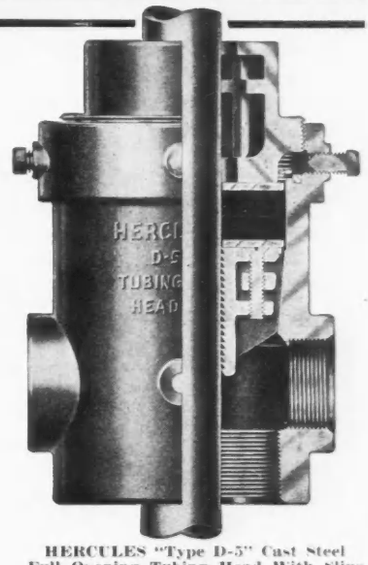
NEW DEPTH RECORD
Austrian well drills to 3100 feet to find oil

Viennese press dispatches state production has been encountered in the Zistersdorf field, Austria, at 3100 feet. If this is true, a new depth record for Austria and Zistersdorf has been established, as well as a new producing horizon in the field.

Zistersdorf field is located near the town of that name and north of Vienna. The discovery well was Anton Raky-Danubia Oil Company's Gosting 1, completed late in 1932 in formation identified as the Flysch. The second well, Erdolproduktions-Gesellschaft, m.b.H.'s Gost-

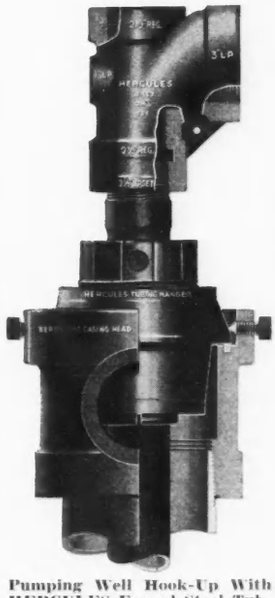


HERCULES "Type D-4" Tubing Head With Slips



HERCULES "Type D-5" Cast Steel Full Opening Tubing Head With Slips

BETTER BECAUSE THEY'RE "OVERHEAD-PACKED"



Pumping Well Hook-Up With HERCULES Forged Steel Tubing Hanger and Upset Thread Tee

The Hercules Tool Company—pioneer of "Overhead-Packing"—has specialized in developing Heads and Hangers of improved design. "Overhead-Packing" is an important feature of our "Type D-4" and "Type D-5" Cast Steel Tubing Heads. The only packing used is *above* the slips, thus permitting repacking and adjustment of pressure on packing *without disturbing the well connections.* Split steel and rubber packing rings are pressed down on top of the slips and around the tubing by means of a split steel packing nut.

"Type D-4" is a high-quality Tubing Head which is offered at an attractive price. However, where the operator wants a full-opening head we recommend "Type D-5" which has an oil-saver top to accommodate a wire line oil saver or tubing spider. The D-5 Head is made of high-grade electric cast steel and tested for 2,000 pounds.

The HERCULES "Overhead-Packed" Forged Steel Tubing Hanger is used with our Upset Thread Pumping and Flowing Tee to make a very efficient pumping hook-up. The Hanger fits any standard Berry pattern casing head. Tee has *both* regular and upset threads, thus eliminating the need for reducing tubing threads before screwing Tee onto tubing.

For full particulars write for special bulletins.

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ing 2, was completed August 22, 1934, at 2000 plus feet for an initial production of 170 barrels per day. Producing formation of Gosting 2, however, was believed to have been from around 1830 feet in what was tentatively identified as Sarmatic.

Petroleos de Mexico, S.A., the government controlled oil company, recently completed Petromex 5 in Poza Rica field, state of Veracruz, for an initial production estimated at 500 barrels per day. Private companies also are participating in development of Poza Rica field, notably El Aguila, a subsidiary of the Royal Dutch Shell group.

TRINIDAD YIELD UP
Figures indicate 1936 will exceed 1935

Figures prepared by the mines department in Trinidad show a total crude production of 1,066,728 imperial barrels on the island in May, an increase of 113,620 imperial barrels over the amount produced in May, 1935.

May's figures show that Trinidad production in 1936 has exceeded each month the amount produced in the corresponding month of 1935, explaining why the total oil recovered there during the first 5 months of this year totals 5,236,848 imperial barrels as against 4,541,641 barrels recovered in the first 5 months of 1935.

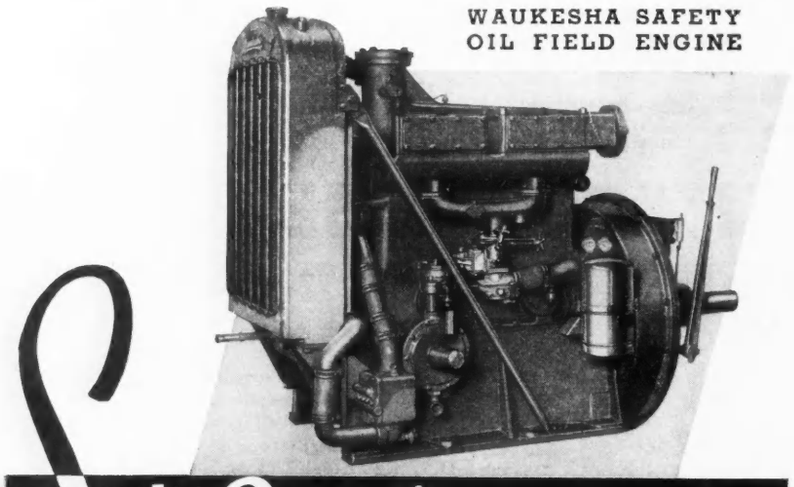
The average monthly yield established thus far this year in Trinidad is 1,047,329 imperial barrels. If this average is maintained throughout the year, Trinidad will produce 12,567,948 barrels, which will represent an increase of 889,311 barrels over the 11,678,637 barrels produced in 1935. Trinidad produced much more oil in the last 6 months of 1935 than it did the first half of that year. If history is repeated in this instance, the above indicated excess of 889,311 barrels will prove too conservative.

The following table shows production in Trinidad by months for 1935 and for the first 5 months of 1936:

Trinidad Crude Oil Production

(Figures in Imperial Barrels)

MONTH	1935	1936
January	915,220	1,079,082
February	843,619	983,424
March	919,848	1,081,191
April	909,846	1,026,423
May	953,108	1,066,728
June	972,904	.....
July	988,341	.....
August	1,003,382	.....
September	992,445	.....
October	1,105,492	.....
November	1,078,957	.....
December	1,086,375	.....
Year Total	11,678,637	.....
Total First Five Months.	4,541,641	5,236,848



WAUKESHA SAFETY OIL FIELD ENGINE

Safe Power

TROUBLE-FREE OPERATION . .

LOWER UP-KEEP . . . . . .

In designing this engine for every oil field service, Waukesha engineers met the operator's double demand for—a high degree of safety from accidental ignition of inflammable vapors or escaping gas . . . and trouble-free, low up-keep performance.

***Water Cooled Manifold*—The exhaust manifold, entirely surrounded by water, forms the sole outlet from engine to radiator. All water, after cooling engine, passes through manifold jacket.**

***Gas-Tight Ignition System*—A gas-tight, water-proof magneto is used, together with super-insulated, water-proof cables, which are connected by screw couplings to the cover plate enclosing the spark plug chamber. A screened opening in the plug chamber provides ventilation for spark plugs and terminals.**

***Automatic Stop*—in case of oil or water shortage—is another important safety feature.**

***Wide Operating Speed Range*—Full loads at 1050 rpm maximum for continuous stationary duty; no load, 1200 rpm maximum for intermittent duty.**

***Triple Size Clutch*—The liberal size and easy adjustment of the clutch contributes materially to low maintenance cost.**

***Oversize Flywheel*—The large 30 in. diam. flywheel, like the clutch, is standard equipment.**

The Waukesha Safety Oil Field Engine is built in one size only . . . 4 cylinders, 45 hp. to 60 hp. Write for Bulletin 898. *Waukesha Motor Company, Waukesha, Wisconsin.*

WAUKESHA ENGINES

FRENCH STRUCTURES

J. Blayac and J. Estival, in a paper presented recently before the sixty-ninth congress of Societes Savantes in France, indicated the existance of several anticlines and domes in the region of Bas-Languedoc, where Triassic production might be obtained at depths ranging from 300 to 400 meters.

Gabian (Herault) field, said to produce from the Triassic, has yielded only 22,000 tons of oil in the last 10 years. Tectonics of the area are very unfavorable, according to Blayac and Estival.

FOUR HEIDE WELLS

Deutsch Petroleum Aktiengesellschaft, working in the old Heide field in Holstein, Germany, has completed four small wells there since it entered the field in April, 1935, with a government subsidy. The first well was completed in September, 1935, and two more completions followed in January. The last completion, recently put on production for 20 tons of oil daily, first cored oil sand in April at 450 meters.

Heide field, discovered 1878, was inactive from 1926 to April, 1935, the month in which Deutsche Petroleum Aktiengesellschaft spudded on a location south of the old field. The four producers of this company are averaging about 10 metric tons each per day.

IRAQ TECHNIQUE

B. O. D. Company, Limited, operating in Iraq, has been fortunately free of drilling and production problems involving use of any new technique, according to word received from Mosul.

WAUKESHA

Getting the Job Done

ENGINES

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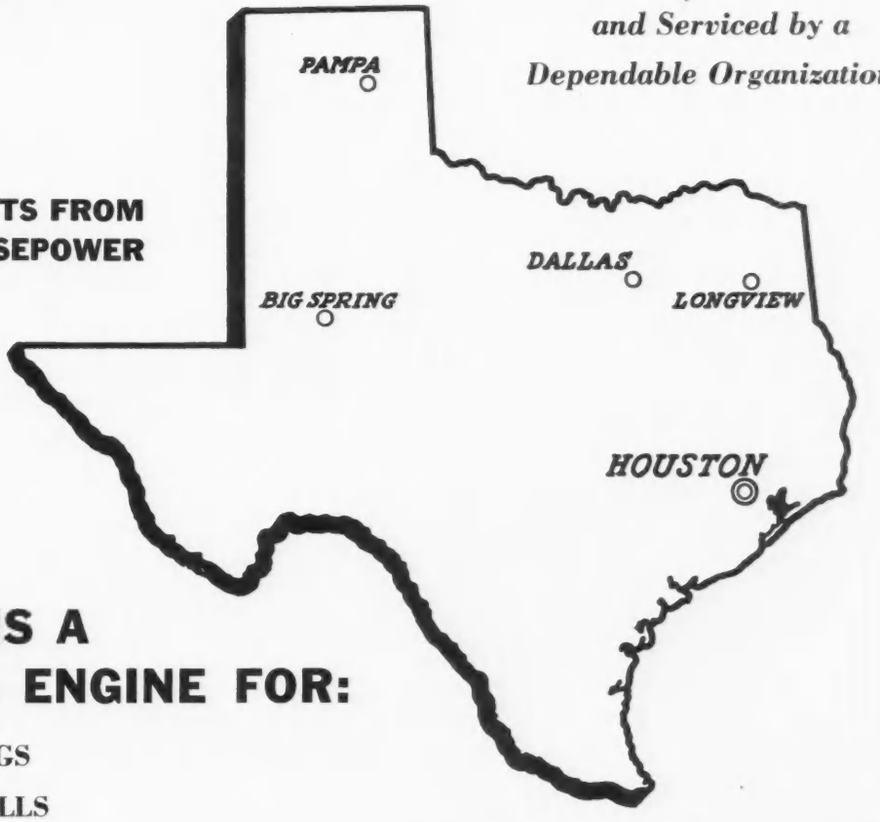

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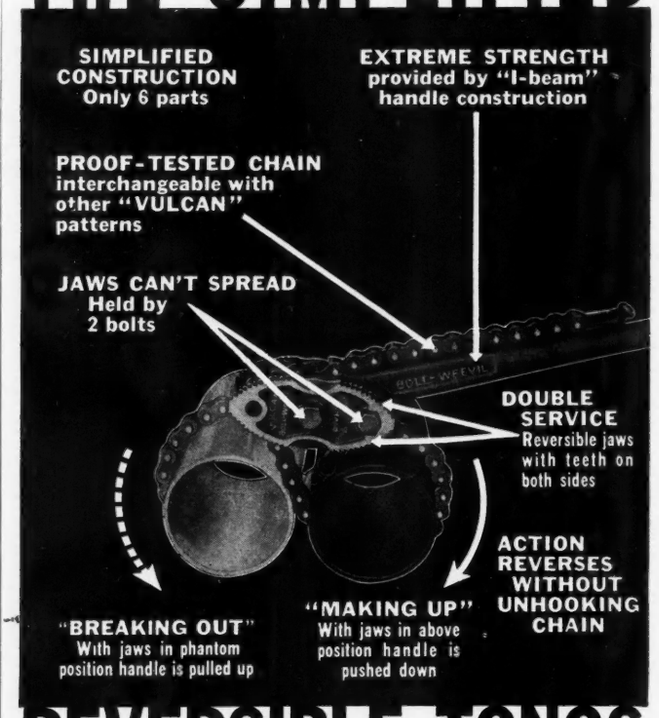
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Greater Seminole

RANKS HIGH AMONG THE FOREMOST FIELDS OF WORLD

By FLOYD SWINDELL

ON July 16, 1936, the date which has been selected upon which to celebrate the tenth anniversary of the discovery of Wilcox sand production in the Seminole District of Oklahoma, that great high-gravity oil area will have yielded in excess of 790,000,000 barrels of oil from approximately 38,000 productive acres or an average of slightly over 20,000 barrels per acre. An investigation of Mid-Continent crude oil price postings over the 10-year period shows a range of from $2.53 to 21 cents per barrel and a general weighted average of $1.222 per barrel. Applying the annual weighted averages to the annual production of the district indicates a gross return in excess of one billion dollars. This performance, along with a number of other interesting features, places the district among the leading oil producing areas in the world. In the following paragraphs it is proposed to discuss briefly the early history of development, to present some of the geologic data and to deal with the economics of the district itself and its economic effect upon the crude oil market.

The first oil production in Seminole County was not in what is now termed the Seminole District, but since development in the Wewoka area of eastern Seminole County was the incentive for the subsequent exploratory campaign which resulted in discovery of the Seminole Group, that area should be included in the discussion of early history. On March 17, 1923, R. H. Smith and associates brought oil men rushing into the Wewoka area when Betsy Foster 1, NW SW NW 33-8n-8e, started flowing at the rate of 3500 barrels per day from a sand at 3150 to 3157 feet. This sand, called the Smith sand in honor of the discoverer, was later correlated as an upper member of the Cromwell sand. Gas production had been discovered in the Cromwell pool in November, 1922, but the Betsy Foster 1 was the first oil well in Seminole County. Within a few months a second member of the Cromwell sand was found to be productive in the Wewoka structure and development was largely confined to these two members. On December 18, 1925, Magnolia Petroleum Company discovered Wilcox sand production on what fas thought to be the south limb of the Wewoka structure when Skinner 1, NW NW NW 5-7n-8e, started flowing at the rate of 4000 barrels per day from 4074 to 4091 feet. This was the first Wilcox sand production in Seminole County.

The first oil production in what is now known as the Seminole District was found on March 1, 1926, when Morgan and Flynn's Ingram 1, NW NW SE 10-9n-5e, was completed for 200 barrels in Earlsboro sand at 3560 to 3580 feet. This was the discovery well in the Earlsboro pool. On March 7, 1926, Indian Territory Illuminating Oil Company discovered the Seminole City pool with the completion of Jones 1, NW NW SE 24-9n-6e, flowing at the rate of 1100 barrels per day from Hunton lime topped at 3975 feet and penetrated to 4012 feet. Discovery of the St. Louis pool which produced originally from Simpson dolomite at 4090 to 4290 feet and the Searight pool which produced originally from Hunton lime at 4090 to 4157 feet, followed during the 60 days after discovery of the Seminole City pool. By May 1, 1926, the Seminole City, Searight, Earlsboro and St. Louis pools were under active development. Materials were being rushed into the field for a large number of wildcat tests and with a few exceptions no leases could be obtained at reasonable figures within many miles of the new pools.

Large wells in the Hunton lime were the center of interest and the actual discovery of the first production in Wilcox sand went almost unnoticed. On July 6, 1926, Amerada Petroleum Corporation's Jones 1, NW NE SE 24-9n-6e, one-quarter mile east of the Hunton discovery well in the Seminole City pool, encountered top of the Wilcox sand at 4258 feet, was drilled to 4277 feet and started flowing at the rate of 60 barrels per day. Ten days later the true importance of this now famous producing horizon was to be demonstrated when a test, which was being looked upon as a probable failure, started flowing at a high rate. On July 16, 1926, Independent Oil and Gas Company and Robert Garland's Fixico 1, NW NW SE 26-9n-6e, topped Wilcox sand at 4065 feet. With a penetration of only eight feet it started flowing at the rate of 6120 barrels per day. Since this was the first well of gusher proportion and since it gave the impetus which resulted in a hectic campaign of development throughout the district, July 16 has been selected as the day of celebration although it is not actually the day upon which Wilcox sand production was discovered in the Seminole district. The campaign which followed remains without an equal in the history of the Mid-Continent petroleum industry and in view of what is now known it is hoped that such a campaign will not be equalled in the future history of development.

Geology

A large amount of material has been published on the geology of the Seminole district and it is not possible herein to more than touch upon the high points of the available data. The Seminole district is situated on the Hunton Arch, a predominant structural feature probably related to the Ozark Uplift of Missouri, Arkansas and ex-

TABLE I

POOLS	1935 Production	Estimated Cumulative Production To 6–1–36	Estimated Cumulative Production To 7–16–36	Estimated Productive Acreage	Recovery Per Acre	Producing Wells 6–1–36	Average Gravity
Allen	2,474,163	39,656,384	40,104,134	2,950	13,595	231	34
Asher, West	307,838	6,793,076	6,820,976	675	10,105	43	42
Bowlegs	3,808,327	102,074,225	102,650,225	3,600	28,514	247	39
Carr City	1,980,318	23,724,593	24,022,093	1,160	20,709	95	39
Earlsboro[1]	3,078,209	121,639,241	121,965,241	4,750	25,677	360	39
Earlsboro et al[2]	3,851,588	49,713,447	50,235,697	2,300	21,842		39
Konawa	669,799	12,734,676	12,812,326	1,200	10,677	87	35
Little River[3]	5,290,739	111,801,949	112,447,699	4,880	23,043	336	39
Maud	657,941	10,665,833	10,709,733	1,520	7,046	68	38
Mission	1,126,337	22,233,451	22,348,201	1,250	17,879	73	39
Searight[4]	1,047,014	31,899,410	32,124,410	1,650	19,469	86	38
Sasakwa	292,015	7,946,657	8,063,657	680	11,858	20	39
Sasakwa Townsite	536,798	1,415,086	1,458,986	120	12,158	8	39
Seminole	3,993,488	113,154,246	113,862,746	4,250	27,176	622	39
Seminole, East	441,108	4,884,907	5,037,907				39
St. Louis-Pearson	8,138,521	107,016,106	108,168,106	7,250	14,920	568	38
TOTALS	37,694,202	767,353,287	772,832,137	38,235	20,212	2,844	

[1]Including Earlsboro Townsite. [2]Including East and South Earlsboro, East Earlsboro Extension and West Seminole. [3]Including East Little River. [4]Including North Searight.

Note:—Keokuk, South Keokuk, Asher, Gray, Fish, Holdenville, Grayson, Grisso and Wofford, are the newer producing areas in the district. This group is estimated to have a cumulative recovery of approximately 18,000,000 as of July 16, 1936, thereby increasing the estimated total cumulative recovery as of July 16 1936 of the entire district to 790,832,137 barrels.

TABLE II

YEAR	Total Production In Barrels For The Year	Average Weighted Posted Price	Gross Indicated Return From Production
1926	12,472,490	$2.39	$29,809,251.10
1927	133,655,702	1.46	195,137,324.92
1928	131,255,313	1.43	187,695,097.59
1929	143,401,403	1.48	212,233,076.44
1930	90,459,423	1.23	111,265,090.29
1931	54,420,131	.54	29,386,870.74
1932	46,554,890	.93	43,296,047.70
1933	45,024,072	.71	31,967,091.12
1934	38,199,619	1.06	40,491,596.14
1935	37,694,202	1.06	39,955,854.12
1936*	21,272,330	1.16	24,675,902.80
	754,409,575	Avg. $1.222	$1,021,567,265.00

*January 1 to July 16, 1936, estimated.

treme eastern Oklahoma. A few of the first wells in the district were drilled with cable tools but the general practice was the drilling from the surface to some point above the objective horizon with rotary tools and completion by the older method. A large part of the development campaign took place before any considerable thought had been given the drilling of straight holes and the frenzied haste in which wells were completed resulted in the largest number of crooked holes known in any district in the Mid-Continent area. It was not until the latter part of the campaign that the practice of surveying for deviation from vertical came into use and many of the holes are now known to have possible maximum drift of several hundred feet. Subsurface conditions already complicated by the forces of nature were made more difficult by the lack of vertical corrections in crooked holes and many structural irregularities based on subsurface correlations probably did not actually exist. The district, however, can be classed as one of considerable structural irregularity and its development required the services of a large number of geologists. It was not until the district had been almost completely developed that a satisfactory interpretation of structural conditions in the Wilcox sand could be made and even now some differences of opinion exist.

In the foregoing discussion the writer has followed the common practice of referring to the Seminole sand member of the Simpson Group as the Wilcox sand. This sand, the most important in the district from a recovery standpoint, is separated from the true Wilcox sand and apparently is a stratigraphic unit which can be recognized throughout the district. The Pennsylvanian rocks at the surface assume the general attitude of a gentle west-dipping monocline upon whose surface many local irregularities occur. En echelon faulting of relatively minor displacement strikes through the area at N. 35 degrees-40 degrees W. Vertical displacement seldom exceeds 50 feet and the traceable length of any one fault usually does not exceed 2½ miles. Only by very close observation can dependable surface mapping be done in the area. Below the Pennsylvanian beds the subsurface structure does not appear to have been influenced by the surface faulting.

Development and Production Practices

Some references to development practices already have been made in this discussion and other than the rapid crooked hole drilling and the early practice of heavy shooting of producing horizons, the district probably has had its counterpart in several other areas. Production by the use of gas lift received its first widspread trial in the Seminole district and engineers still are in disagreement as to the probable ultimate effects. It was general practice to place wells on gas lift early in their productive life if not initially. As a result many of the properties passed their flush stage at an early date. It is suspected by some engineers that such a rapid rate of withdrawal has resulted in by-passing and trapping which may have made some of the oil irrecoverable. In a few instances five spot wells have indicated complete drainage and the absolute truth of the matter never will be known.

In 1929 restrictive measures enacted into law in 1915 were rigidly applied to the district and since that date it has been remarkably well controlled. At this time the district is producing at the rate of about 150,000 barrels per day and making about 10 barrels of water for every barrel of oil. Water has seriously encroached on most of the older pools and the district probably should be classed as being in the early settled stage although a number of the newer pools are now in the flush period. Many of the younger producing areas have been robbed of their original formation pressure and the flush stage probably will be passed at an abnormally early date. Since the district is well down on the decline curve and at a point where the curve should continue to flatten the future development probably will continue to offset the decline for some time.

Economics

The Seminole District's chief claim to fame probably is in the very high recovery per acre and the fact that a large amount of oil was delivered to the market while the posted price was far above the average of the past 10 years. Table 1 shows the 1935 production, the cumulative production to June 1, 1936, estimated cumulative production to July 16, 1936, productive acreage, recovery per acre, the number of producting wells as of June 1, 1936, and the average gravity for each of the 16 older pools of the district. It will be noted that the lowest recovery per acre is from the Maud structure which had yielded as estimated 7046 barrels and the highest is from the Bowlegs pool where a yield of 28,514 barrels per acre has been obtained. Average for the 16 older pools is 20,212 barrels per acre. Actual production figures for June and for the first 16 days of July, 1936, will not be available until some time late in August, this fact accounting for the estimates injected into the cumulative recovery as of July 16, 1936.

A very large number of individual properties in the district have recovered more than 50,000 barrels per acre and the records show that several have exceeded 100,000 barrels per acre. Likewise a large number of wells have shown spectacular recovery performances. Lack of space prevents the discussion of these outstanding wells and properties in detail. One well in the district does, however, stand upon the records as having recovered more oil than any other well in Oklahoma and it would be remiss not to present some of the details in connection with that well. On July 10, 1927, The Texas Company's C. Rogers 1, in the southeast quarter of 5-9n-5e, in the Earlsboro pool, was completed for 11,230 barrels per day, being initially one of the largest wells in the district. The well was on gas lift for 24 months at the end of which time it went on the pump.

Table 2 shows the production by years, the average weighted price and the gross indicated income from production for the 16 older pools of the district. The average weighted price was obtained by multiplying the number of days that any definite price was effective by that price and striking an average of the number of figures thus obtained for any one year. It will be noted that as of July 16, 1936, the estimated gross income will have been $1,021,567,265.00, not including income from natural gas and natural gas gasoline. This income is based on recovery figures presented in Table 2. For several years the writer has maintained a file of recovery figures by pools by years and it was from this file that the figures presented in Table 2 were obtained. In checking recovery as of June 1, 1936, with the statistical department of one of the major companies it was found that the data from the latter source exceeded those being kept by the writer by 18,422,562 barrels over the 10-year period. The recovery figures of the major company are used in Table 1 but since they could not be broken down by years they were not adaptable for use in Table 2. Therefore, the indicated gross return as shown in Table 2 is conservative if the recovery figures of the major company are to be taken as the more nearly correct. The difference amounts to slightly less than 2½ percent, based on the larger figures.

The Seminole district stands near the head of the list of outstanding high-gravity oil producing areas of the world when all factors are taken into consideration. The East Texas pool exceeds it in total recovered oil. That any producing area will overshadow it from an economic standpoint is doubtful in the light of present conditions. Despite the large amount of water which must now be handled and the irregular encroachment of water high on several of the structures the district will continue to be a factor for some time. Without it Oklahoma probably would have dropped into the second division as compared to the leading producing states of the Nation.

More Rigs Active

53 TESTS DRILLING IN NORTH OKLAHOMA CITY

WEEKLY STAFF REPORT

Oklahoma City.—While there was a lull in the completion rate for the north extension of the Oklahoma City pool last week, the number of active tests in the area jumping to 53 against 44 for the week previous. Only six wells were on the completion list for the week.

Meanwhile six locations were staked and work was resumed on sufficient tests to turn the active well list upward. A check of development found 18 drilling wells at the completion stage, most of them waiting on cement. There are still seven wells shut down. These are adjacent to other wells which missed the Wilcox sand and drilled on to the Simpson zone, where they made small producers.

An effort is being made to remove Simpson zone wells from proration restrictions. If this is successful, work will be resumed on the wells that have a chance for output from formation just below the Wilcox sand.

The drop in completions for the first 10 days of the month leaves it doubtful that the end of July will find the drilling campaign for the north extension at an end. Four of the new locations are in the area between the extension and the older part of the field. The major part of this area is the Lincoln Terrace residential section, where one project has been blocked by injunction proceedings. Should this litigation favor drilling, the development program will be determined by the outcome of the locations recently staked.

Seek to Define Moore

Meanwhile drilling wells were spread out from production in the new Moore pool of Cleveland County. Because of previous dry holes, Moore is looked upon as a field of small area. The community block to which production is now defined consists of only 1360 acres. Drilling, however, has been started on tracts outside of the unit block.

The next well due for completion at Moore is Sinclair Prairie Oil Company and associates' Marvel 1, NW SW NE 21-10n-2w, which is rigging up to set seven-inch casing, total depth, 7267 feet. It was opened through nine-inch casing and made 630 barrels of oil in 30 minutes.

A west offset, Peaches 1, NE SE NW, 21-10n-2w, is drilling below 7200 feet. Fant 1, NWc 27-10s-2w, has set nine-inch casing at 3378 feet and will resume drilling when cement has set. This well is an east offset to Rice 1, second producer of the field.

All these wells are on a unit block, whose development is being carried out by Sinclair Prairie Oil Company.

Outside the block, Sinclair Prairie Oil Company is drilling at 2550 feet in Stubbleman 1, NE SW NE 34-10n-2w. This well is on a northwest southeast trend in line with wells producing. Should it be completed as an oil well development of the area south of the unitized block would come on at a heated pace.

Other drilling tests around the unit block are active. Anderson Prichard Oil Corporation's State 1, SWc SE 16-10n-2w, drilling 3385 feet. This test is north of the unit block.

Stauffer Petroleum Company has a rig outside of the block to the west, Stauffer 1, NE SE NE 20-10n-2w.

Stahl Petroleum Corporation is preparing to spud Schilstra 1, SW NE NE 17-10n-2w.

Gulf Oil Corporation's James 1, NWc SW 27-10n-2w, a test a location south of the border of the unit block, is drilling around 5000 feet.

Denver Oil Producing Company's Keller 1, NWc SE 34-10n-2w, is drilling below 4000 feet.

The length of the area included in this well is more than five miles northeast by southwest. These early drilling wells indicate belief in a narrow field.

Carter Oil Company and Gulf Oil Corporation's Miller 2, SW NE SE 28-17n-4w, a north offset to Continental Oil Company's 33,928-barrel well, was given a 30-minute test July 8. It made 1080 barrels with 55,000,000 cubic feet of gas through casing. Total depth is 6324 feet in the second Wilcox of the Crescent pool of Logan County. The well was shut in due to lack of tankage.

Type of double trapping of gas and oil in Fitts field for separation for pipe line and gasoline plant utilization.

OKLAHOMA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARTER COUNTY—		
Louis Sykes, Byrd 4, nw se sw 4-2s-2w	*	1524
Shell Pet., Higgens 4, se nw se 6-2s-2w	2	2048
Coline Oil, Higgens "A" 1, sw sw ne 7-2s-2w (otd 1834)	12	1840
Carter Oil, Williams 1, sw ne sw 27-2s-2w	¶17-1711	8105
Shell Pet., McClure 41, se sw sw 5-4s-3w	54	1015
CLEVELAND COUNTY—		
Sinclair Prairie et al, Franklin 1, se nw se 21-10n-2w (otd 7297)	¶69-35,274	7318
CREEK COUNTY—		
Grant, White 8, ne sw ne 19-17n-11e	*	2450
Tibbins Estate, Sneed 4, ne ne nw 18-14n-9e	75	2352
Marble, Tiger 2, nw ne ne 13-19n-7e	33	2513
GARFIELD COUNTY—		
Sherry et al, Hoken 1, nw nw sw 32-20n-4w	*	7059
HUGHES COUNTY—		
Stanolind-Amerada, Harris "C" 3, se ne nw 8-6n-8e	540	4215
Manahan, Oliphant "E" 6, ne sw nw 1-9n-8e	150	1717
Sinclair Prairie, Oliphant 12, ne se se 1-9n-8e	72	1672
Manahan, Simmer 3, sw sw sw 12-9n-8e	148	1875
JACKSON COUNTY—		
Gulf Oil, McDaniel 1, sw se ne 3-1n-20w	87	1449
Gulf Oil, Kelly 8, sw ne ne 10-1n-20w	32	1510
LINCOLN COUNTY—		
Stanolind-Amerada, Rice 8, nw nw ne 11-14n-3e	164	4211
LOGAN COUNTY—		
Mid-Continent, Campbell 3, nw se ne 33-17n-4w	¶6-7786	6255
OKFUSKEE COUNTY—		
Manahan, Dolton 7, se ne se 36-10n-8e	175	1753
Snyder, Harjo 1, nw se sw 25-11n-9e	*	1540
Ralvern Oil, Keys 1, cse nw 11-11n-8e	1600	3919
OKLAHOMA COUNTY—		
Barnsdall, Edwards 3, sw se se 15-12n-3w	¶18½-16,642	6462
Edward 4, nw se se 15-12n-3w	¶21-17,494	6436
Edwards 5, nw nw se se 15-12n-3w lcn. abd.		
Guthrie 3, sw sw se 15-12n-3w	488	6438
Black Gold, White-Debolt 1, ne sw se 15-12n-3w	75	6465
Anderson-Prichard, Jackson 1, nw sw ne 22-12n-3w	¶8-1575	6475
Barnsdall, Fitzhugh 1, nw nw se 22-12n-3w	9981	6475
Barnsdall, Fitshugh 2, nw nw se 22-12n-3w	9716	6490
Black Gold, Sawyer 3, se nw ne 22-12n-3w	859	6462
Hall et al, Villa 1, se ne sw 22-12n-3w	¶9-8300	6489
Phillips, Harrell 1, ne sw se 22-12n-3w	9952	6447
Howell 1, nw ne se 22-12n-3w	¶13-12,429	6494
D. F. Sawyer 3, ne ne ne 22-12n-3w	¶18-15,408	6445
Plaza Oil, Dewey School 1, se nw ne 22-12n-3w	¶15-12,330	6458
Sunray Oil, Avey 1, se nw se 22-12n-3w	¶5-8424	6440
Pure Oil, Berquist 1, sw sw se 30-14n-3w	¶1-1392	6711
OKMULGEE COUNTY—		
Sinclair Prairie, Tiger 2, se sw nw 29-13n-12e (otd 2329)	*	3308
Robinson, Burton 2, sw se nw 30-14n-13e	5	1634
Reliance Oil, Cowan 6, nw ne sw 26-16n-11e	15	1877
OSAGE COUNTY—		
Idaho Oil, 2 sw ne sw 18-22n-12e (otd 1824) (pb 2180)	18	2187
Sinclair Prairie, 38, cw½ nw nw 19-23n-12e	3	1832
Lewis & Continental, 13, ne sw se 9-24n-7e	209	2636
Lewis & Continental, 14, nw se se 9-24n-7e (pb 2588)	249	2592
Carter et al, 6, sw ne se 10-25n-7e	¶35½-312	2880
Sinclair Prairie, 6, nw nw ne 16-25n-6e	1477	2830
PAWNEE COUNTY—		
Sheltz et al, Grieves 1-A, ne ne sw 30-20n-8e	*	2688
Jack Phillips et al, Eldridge 2, cwl sw se 7-20n-9e	9	1261
PAYNE COUNTY—		
Amerada et al, 2, sw se se 28-19n-3e	377	4302
Twin State Oil, Morris 1, ne nw sw 5-19n-5e	200	3644
PONTOTOC COUNTY—		
Carter, Brown 2, ne se se 25-2n-6e (pb 4210)	14,400	4280
Clark & Cowden, Summers 6, sw sw ne 17-2n-7e	8	1724
Fleetborn, Woolley 8, sw nw sw 27-2n-7e	3241	4282
Magnolia, Metropolitan Life 7, sw ne ne 27-2n-7e	3495	4275
Simpson-Fell, Westheimer 1, se ne ne 27-2n-7e	2787	4265
Skelly, Park College 12, ne nw ne 28-2n-7e	4008	3720
Magnolia, Simpson 9, nw ne ne 29-2n-7e	3151	4335
Simpson 10, se ne ne 29-2n-7e	3124	4288
Moore, Harper 7, nw nw ne 29-2n-7e	2376	3785
Deep Rock, Hardin 6, ne se ne 30-2n-7e	1168	3688
Moore et al, Atkins 1-A, nw nw nw 32-2n-7e	4943	4392
Selby O & G, Sands 1, ne ne ne 20-3n-5e	*	1907
Mid-Texas, Looney 1, ne ne nw 31-5n-4e (pb 1900)	*	2495
POTTAWATOMIE COUNTY—		
Producers, Inc., Cardwell 2, se sw nw 17-7n-4e	210	4232
SEMINOLE COUNTY—		
Sinclair Prairie, Rogers 1, nw ne se 12-5n-7e	594	4199
Wood Oil, Harjo 1, se sw nw 12-5n-7e (pb 4194)	90	4202
Kingwood, Dodson 1, ne se ne 28-6n-6e	*	3958
Fleetborn, Cahill 2, csl nw ne 7-6n-8e	17	2890
Green, Spillman 2, sw sw sw 7-6n-8e	16	3170
Fleetborn, Stump 6, ne se sw 27-8n-8e	500	4183
Carter et al, Stewart 1, ne ne se 10-9n-8e (otd 4069)	37	4091
Carter Oil, Whitney 2, cw½ se sw 7-10n-6e	531	4636
Mid-Continent, Black 1, ce½ ne ne 15-10n-6e	115	4195
Carter et al, Diamond 1, cs½ nw ne 35-11n-6e	330	4162
STEPHENS COUNTY—		
McCasland, Parker 1, ne ne sw 2-1n-6w	*	2518
George Pace, Fee 6 (Payne), ne ne nw 28-2s-7w	20	1301
Skelly, Ed Martin 7, sw se nw 36-1s-5w	*	837
Mudge Oil, Robertson 7, se sw sw 10-3s-5w	5	335
TULSA COUNTY—		
Mechlin, Luster 3, se nw ne 14-19n-13e	*	1302

*Failures; †Junked; ¶Million cu. ft. gas.

PUBLIC AUCTION SALE

UNIVERSITY OF TEXAS

Oil and Gas Leases

JULY 20, 1936

For Details of Sale See Page 140

METHODS STUDIED
Fitts operators seeking way to take potentials

Tulsa.—Operators of Fitts pool, Pontotoc County, held a meeting in Tulsa, July 8, to consider methods of taking potentials on all wells of the area. At the last previous meeting held for the same purpose, it was suggested that the decline in bottom hole pressure would serve as a basis of proration, but subsequent tests made it apparent that such a basis would not be in line with the wells' productive capacities. Another suggestion which met with favor from the operators, was to reduce the field potential three percent below that now in force, such decrease to be in effect until a definite decision as to the manner of taking potentials is reached and to include the month of August.

Following the presentation of information gained through a study of the relationship between accumulative output and initial production, operators agreed that the plan merited further consideration and may be used to form an acceptable potential method. A more complete study of the involved factors is underway, the evidence obtained to be presented at another meeting of operators scheduled for July 22, in Tulsa.

NEW POOL FOUND
Carter County wildcat shows for production

Ardmore.—Another producing area has been proven for northwest Carter County, southern Oklahoma, by W. H. Riddle and Associate's Tussy 1, SW SE SW 6-1s-3w, which showed for an estimated 80 barrels of oil per day. Additional equipment is being moved to the location. Tussy 1 is three miles north of the north end of the Scholem Alechem pool, and is located upon the same anticline that has proven productive through western Carter and southwest Garvin Counties. A number of structures characterize this anticline, not all of which have proven productive, although there are more than 10 possible producing horizons, all of them being sands. The new producer found production at 2918 feet and 3023 feet after plugging back from 3402 feet. Most of the production in adjacent areas is coming from the higher levels, deeper tests in the region having condemned the lower strata. Plans are underway for two offset locations, one to the south by the same interests and another to the east by Amos Drilling Company.

Gulf Oil Corporation's Shirley 3, NW NE 6-1s-19w, an offset to the same Company's Shirley 2, which extended the Tipton pool of Jackson County to the southeast, was completed during the week at 2622 feet in lime in the Cisco series. Tested for 18 hours, the well made 100 barrels through a three eighths-inch choke. Following the completion of Shirley 2, operators moved tools to this well, which had previously been drilled to 2607 feet.

Carter Oil Company's Walker-Voorhees 1, CSE SW 34-5s-2w, is drilling in shale below the middle of the Pennsylvanian,

and is the deepest drilling well in southern Oklahoma. (Sinclair Prairie Oil Company's Stockton 1, SE SE SW 26-6s-2w, near Oswalt in Love County, is temporarily shut down.) Provided that no deep production is encountered, Walker-Voorhees 1 probably will be plugged back to test shows encountered some distance up the hole.

Gulf Oil Corporation's Wearmouth 1, SE NE SE 31-1s-18w, northwest of Frederick, in Tillman County, is drilling in broken brown lime and shale below 5071 feet. The same company's McWilliams 1, NW SW SW 15-3s-17w, also a Tillman County test is in shale at 4408 feet and is drilling ahead. Eugene Skinner and other's Riling 1, SEC SW 22-1s-15w, in northeast Tillman County, set surface pipe at 232 feet and is drilling ahead.

Ed V. Parsons has announced location of a prospective 7000-foot test in northwest Stephens County. Location is in CSW SW 21-2n-8w, north of the North Duncan pool. No wells have been drilled to the lower horizons in this immediate sector.

Amerada Petroleum Corporation and Stanolind Oil & Gas Company's Westheimer 1, SW SE SW 27-6s-2e, Love County wildcat with a depth of 2790 feet, shot casing between 1599 and 2106 feet and swabbed 39 barrels of oil in 24 hours. Operators are testing at this depth at the end of the week.

Lloyd Noble, independent operator and contractor of Ardmore, has acquired producing properties in Hewitt and Wilcat Jim pools of Carter County from Coline Oil Company. Consideration was reported as $250,000 for both lease blocks and production.

Another New Field

LINCOLN COUNTY WILDCAT A HUNTON LIME PRODUCER

Tulsa.—Amerada Petroleum Corporation and Stanolind Oil & Gas Company have opened a new producing area in southeast Lincoln County, production being from the Hunton lime. Their Zimmerman 1, SWc NE 10-12-5e, drilled into the Hunton at 4358 feet and after being acidized with 1000 gallons, flowed and swabbed 80 barrels of oil in 17 hours. This location definitely proves a new Hunton lime pool for this sector. Nearest production is at Wilzetta, six miles to the north. In this area the Wilcox has been tested but proved dry, and the sector is considered condemned in both Wilcox sands and below.

In the same county, southeast of Perkins, Skelly Oil Company's Sporn 1, NW NE SW 21-17-3e, a wildcat location on the Cushing tend, encountered a show of oil between 2510 feet and 2530 feet, but did not test. The well is being deepened.

McElreath & Suggett Inc.'s Lasater 1, SEc SW 2-2n-1w, Garvin County wildcat near Brady, had a show of heavy oil in a core taken from 4557 to 4563 feet. This well topped the Viola at 4485 without encountering oil, and is drilling hard lime below 4567 feet.

Continental Oil Company's King 1, NE SW NE 26-1n-8e, Coal County wildcat that showed for 180 barrels from 30 feet of sand above 809 feet, drilled through the shallow pay and is below 1200 feet. Another show of oil was found from 903 to 906 feet in a core. Sinclair Prairie Oil Company's Culver 1, NWc SW 16-1n-8e, also in Coal County, developed a fishing job at 2315 feet.

In the Jesse area of Pontotoc County, Sunray Oil Company's Shumard 1, the Townsite location completed in the bromide lime at 4554 feet, flowed 217 barrels of oil in two hours, and later, on a 14-hour test, flowed 1307 barrels. Both tests were made through a 1-inch choke in 2½-inch tubing. Continental Oil Company's McCarty 3, SW SE NW 12-1-7e, in the same pool, was completed last week for 1051 barrels of oil from the Wilcox sand, and cut a small percent of salt water. Sunray Oil Company is staking a location for a west offset to their Shumard 1.

Stanolind Oil & Gas Company and

WHAT IT SHOWS

■ The most important item is the amount the bank owes to depositors "Liabilities". The second is "Resources" to meet these obligations, and third is the obligation to the stockholders "Capital".

■ The chief debt of a bank is the amount of deposits of its customers. Its chief resources for paying this are usually cash and deposits in other banks, loans, government bonds and other readily marketable securities. Capital, surplus and undivided profits constitute added protection to depositors.

STATEMENT OF CONDITION JUNE 30, 1936

RESOURCES

Cash and Due from Banks	$23,911,990.52	
U. S. Government Securities	16,670,722.02	
Other Bonds and Warrants	4,542,141.51	45,124,854.05
Loans and Discounts		15,569,555.26
Overdrafts		3,375.76
Income Receivable Accrued		161,882.11
Stock in Federal Reserve Bank		240,000.00
Investment in Bank Premises		2,251,000.00
Customers' Liability under Acceptances		5,393.25
TOTAL		$63,356,060.43

LIABILITIES

Deposits		$54,618,680.95
Acceptances Executed		5,393.25
Income Collected not Earned		61,768.75
Interest, Taxes, etc., Accrued		66,071.34
Capital—Preferred	$ 4,000,000.00	
Capital—Common	2,000,000.00	
Surplus	2,000,000.00	
Undivided Profits and Reserves	604,146.14	8,604,146.14
TOTAL		$63,356,060.43

COMPARATIVE DEPOSITS

June 30, 1933	$27,517,143.20
June 30, 1935	40,250,985.50
June 30, 1936	54,618,680.95

NATIONAL
BANK OF TULSA
TULSA, OKLAHOMA

Member of Federal Deposit Insurance Corporation

Amerada Petroleum Corporation's Goodman 2, NWc NE 5-10-4e, in the Shawnee pool of Pottawatomie County, is coring and drilling Dolomite near 5500 feet. Some oil was obtained in cores. The well is to be carried on down.

Amerada Petroleum Corporation and Stanolind Oil & Gas Company's Pratt 1, SEc 29-19n-5e Payne County, swabbed 148 barrels of oil and basic sediment in a test ending Friday morning, July 10. Approximately one barrel of water accompanied the flow from a total depth of 3784 feet in the second Wilcox. An earlier test, made at 3780 feet, gave a recovery of 80 barrels of oil and basic sediment, with a slight showing of water. This well is directly north of the West Norfolk pool of Payne County and eight miles north of Cushing.

R. L. Kemp's Lohaus 1, south of Cushing, but in northern Lincoln County, was plugged back to the top of the second Wilcox after showing for water at 4038 feet, two feet into the second sand. Initial prospects of this well were encouraging when it sprayed 15 barrels of oil with considerable gas from 4016 feet in the first Wilcox.

Pure Oil Company's Raney 1, an old well at SEc NW NE 26-12-11e, that made gas from the Lyons-Quinn sand in eastern Okfuskee County, was deepened after killing the gas. The Wilcox sand was topped at 3583 feet and drilled to 3621. Production was estimated at 180 barrels per day. Most of the land in this area is under lease, much of it being productive of gas at the shallower depths. Other wells in the vicinity may be deepened to the Wilcox as a result of this production.

Oklahoma reported 55 first reports for the state during the past week. Pontotoc County was far in the lead with 17 new locations reported. Seminole County was second with 8, Oklahoma next with five. Okfuskee County made four first reports, Creek, Osage and Pottawatomie Counties made three first reports, Carter, Kay and Noble Counties reported two starts and Hughes, Jackson, Jefferson, Logan, Tillman and Tulsa Counties each made a single location.

Seventy-nine wells were completed in Oklahoma during the past week, 66 being oil wells with an initial production of 221,020 barrels. Twelve wells were failures and there was one abandoned location. No gas wells were completed.

Several Strikes

KANSAS WILDCATTERS FIND POOLS IN TWO COUNTIES

WEEKLY STAFF REPORT

Wichita.—After two unusually dull weeks, Kansas operators last week opened another Rice County pool, proved a production area in northeast McPherson County that was indicated three weeks ago, and found showings in important wildcats.

Simpson and Noble Drilling Company and Stanolind Oil & Gas Company's Bowman 1, SW NW 22-19-10w, Rice County, swabbed 89 barrels of oil in 16 hours from the Siliceous at 3294 feet. Operators cored ahead to 3298 feet, where the well swabbed 34 barrels in 8 hours. Drilling ahead to 3305 the well showed a little water and was acidized between 3286 and 3294 feet with 3000 gallons. A subsequent test showed 185 barrels in four hours on the swab, settling to a steady rate of 2½ barrels hourly.

Bowman 1 is about two miles north and east of Hartman-Blair Corporation and The Texas Company's Shartz 1, NE SE SE 33-19-10w, which pumped 335 barrels in 15½ hours after being acidized in the same formation. Shartz 1 and Bowman 1 are located northeast of the production in the Silica pool and south of the Brandenstein production. Both wells are considered to be on the same high, but one that is not structurally connected with either of the mentioned pools.

McPherson County Strike

Empire Refining Company's Cunningham 1, SE SE SE 21-18-1w, in northeast McPherson County, which showed for oil three weeks ago but was not given a thorough testing because of difficulties with water from an upper stratum, was acidized with 3000 gallons and allowed to set for three days. After accounting for the oil load over the acid the well pumped 287 barrels of oil in 12 hours, being bottomed in Mississippi chat at 2832 feet. There is no other production within five miles of Cunningham 1, the nearest pool being the Ritz-Canton area. The location is slightly east of the general structural trend of the county.

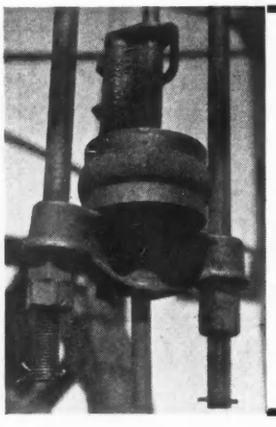
Near the old play in Cowley County, Lloyd, Frost and Study's McKinley 2, SW NW NE 33-31-3e, topped the Siliceous lime at 3297 feet and showed for oil at 3301 feet. Being deepened to 3315 feet in the same formation, the well flowed 80 barrels an hour on test, and is an important extension of the Churchill pool.

The outlook for greater play in Ellsworth County was encouraged by F. Jones, G. W. Hinkle et al's Beyers 1, SW SW NW 18-17-10w, a wildcat which last week proved a new pool one mile south of Breford pool, on the Ellsworth-Barton County line. On a 21½-hour potential test the well pumped 955 barrels of oil from 3296 to 3310 feet in the Siliceous lime. This test was made without acid and indicates either an important extension or a new pool.

Another wildcat that is showing for oil is Phillips Petroleum Company's Kaufman 1, NE NW 2-22-2w, three miles south of Moundridge in Harvey County. Kaufman 1, with casing set at 3358 feet, will be drilled into the Hunton lime for a test. National Refining Company's Sutter 2, NWC SW NE 1-28-6e, a well in the McCullough pool of Butler County, filled 2473 feet with oil from the Simpson Dolomite at 3186 feet. Saturation was found in the lower member of the Wilcox sand and continued to bottom in dolomite, checking higher on the structure than any offset well. Operators are to shoot this well in the producing zone after first acidizing with 1000 gallons. The well is a north and east offset to present production.

In Rice County, the two tests to show for large gas production east of Lyons have not been drilled to the lower strata. Shell Petroleum Corporation's Maughlin 1, NE NW SE 11-20-8w, was unable to clean out after a fishing job. The well will be treated with 1000 gallons of acid at 3294 feet, and if there is no result it probably will be abandoned and a new hole started. Simpson Oil Company's Wiggins 1, CSL N½ NE 35-19-8w, another gas well in the area, is inactive after drilling into the gas. Operators are preparing to kill gas and deepen this well to test lower strata.

In the same County, Stanolind Oil & Gas Company's Panning 1, NW SW NW 33-19-10w, an offset to production, swabbed 100 barrels of oil an hour from the Arbuckle lime at 3293 feet after being treated with 3000 gallons of acid. In same township, section 22, the same inter-



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THE ENGINEERING COMPANY
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Tulsa, Oklahoma

ests' Bowman 1, is drilling at 3309 feet after showing for less than the expected production from the lime at 3294 feet.

Vickers Petroleum Company and others' Kraus 1, 22-14-19w, southwest of Hays, is drilling the Oswald lime below 3565 feet after obtaining a showing up of the hole that may be tested later. Two new wildcat locations have been reported for Ellis County: Lario Oil & Gas Company has staked the center of 26-13-19w, four miles northwest of Hays, and Champlin Oil & Refining Company is moving material for Hadley 1, SE SW NE 30-11-17w.

The Graham County test, Vickers Petroleum Company's Hutton 1, NE SE 9-8-22w, is drilling for the Arbuckle lime below 3800 feet. Some earlier shows were encountered but yielded considerable water when tested.

Rose Spring Drilling Company et al's Swanson 1, NEC NW 1-23-5w, Reno County, recovered seven feet of saturated core from Wilcox sand between 3953 feet and 3960 feet. If this well obtains production from this stratum, it will be the first Wilcox well in the county. Location is northeast of Hutchinson and west of the Burrton pool. Crown Petroleum Company has announced a wildcat location for Reno County: Van Horn 1, NE 13-22-8w. Continental Oil Company has made location for Snook 1, NE NW SW 10-22-8w, Reno County. Both of these locations are directly south of Sterling, in north central Reno County.

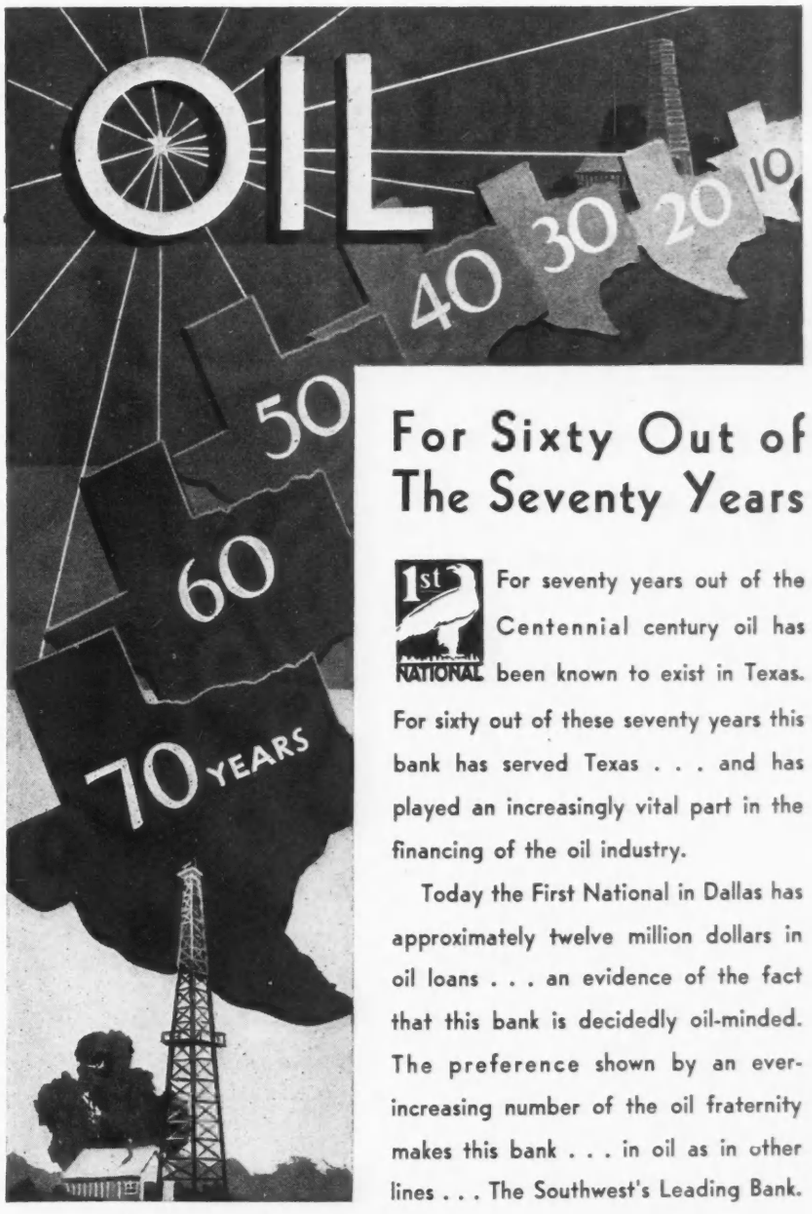
Kansas scouts reported a total of 39 new locations for the past week, with Reno in the lead with eight starts. Rice was second with six, reflecting the result of new discoveries in that county. Ellsworth added five, Ellis four, Barton and Stafford three each, and Butler, Mc-

KANSAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARBER COUNTY—		
Barbara Oil, Lytle 4, csw se 11-33s-13w	¶934	4565
BARTON COUNTY—		
Mid-Continent, Schmidt 6, ne ne sw 36-19s-11w	728	3287
Phillips, Matzek 5, sw sw ne 36-19s-11w	1483	3295
BUTLER COUNTY—		
Rex & Morris, Olson 1, nw sw se 15-28s-6e	*	3059
COWLEY COUNTY—		
DeGenther Oil, Holt 1, nw nw se 15-30s-5e	lcn.	abd.
Scroggins, Brady Estate 1, ne ne se 30-31s-3e	lcn.	abd.
Braden Prod., Sparks 1, se se nw 35-33s-4e	*	3266
ELLIS COUNTY—		
Jones Bros. & Carpenter et al, Solomon 1, se se sw 28-11s-19w	600	3632
Twin Drlg., Goetz 2, ne sw se 3-14s-17w	412	3560
Bridgeport & Hall, Madden Estate 2, ne nw nw 26-15s-18w	400	3341
GREENWOOD COUNTY—		
Nye et al, Morgan 2, cne nw 7-24s-12e	150	1814
RENO COUNTY—		
McBride, Semens 1, sw se se 36-22s-4w	903	3350
Olson & Shell, Sabin "A" 3, csw se 13-23s-4w	¶5-455	3381
Shell Pet., Welch "B" 1, cse se 4-24s-4w	1279	3379
Dewe & Dustin, Mildren 1, csw se 24-24s-8w (otd 3550)	*	4231
Shell Pet., Whipple 1, cel ne 15-26s-9w	9093	4147
RICE COUNTY—		
Continental et al, Kimple 2, ne ne nw 25-18s-8w	1796	3158
Continental, Foote 4, nw ne se 7-20s-9w	407	3295
Sinclair Prairie, Sharpe 6, se ne ne 7-20s-9w	412	3277
Darby, Johnson 2, ce½ e½ sw 10-21s-7w	*	3800
Garden Bros., Hausechild 1, sw sw se 10-21s-7w	6912	3385
RUSH COUNTY—		
Pryor & Lockhart et al, Stegman 1, sw nw ne 11-16s-17w	*	3550
RUSSELL COUNTY—		
Shell Pet., Brown 1, ne ne se 31-13s-14w	521	3313
Billings, Witt 31, ne se sw 3-14s-15w	*	3371
Central Pet., Benso "C" 1, se se sw 9-14s-15w (otd 3096)	292	3313
Wakefield et al, Krug 1, ne nw sw 7-15s-14	*	3285
SUMNER COUNTY—		
Stelbar Oil, Frankum 4, se se ne 32-31s-1w	648	3680
Clyde Pulse et al, Hawkins 1, nw nw ne 1-32s-2e	lcn.	abd.
Helmerick & Payne, Wartick 1, se sw se 11-32s-2e	20	3051
TREGO COUNTY—		
Alma Pet. & McNeeley, Kraus 1, cse se 15-11s-23w	459	3575
WOODSON COUNTY—		
Quartet Oil, Ott 5, nw sw sw 21-23s-14e	15	1700
Gillespie & Son, Naylor 1, sw sw nw 25-25s-14e	*	1531

*Failures; †Junked; ¶Million cu. ft. gas.



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FIRST NATIONAL BANK IN DALLAS

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

Pherson, Russell and Sumner each counted two. Cowley and Sedgwick made a report of a single start in each county.

Of the 32 wells completed in Kansas during the past week, 20 were completed as oil wells with an initial production of 26,985 barrels. One well was completed for 9,800,000 cubic feet of gas. Eight wells were failures and there were three abandoned locations.

WM. F. PRATT, executive department, Venezuela Gulf Oil Company at Maracaibo, Venezuela, is spending a vacation in the United States.

Federal and state taxes on motor fuel now comprise a retail sales tax averaging about 40 percent.

Interest Revived

STRIKES IN WEST CENTRAL KANSAS IMPROVE OUTLOOK

Wichita.—Finding prolific production in the siliceous lime and Misisssippi chat pools of west central Kansas, aided by better conditions of the industry in the Mid-Continent area, have brought a return of interest in exploration along the southwest slope of the Central Kansas uplift. Major companies and independents are engaged in a close study of possible structural formations in this area, with the result that increased wildcat activity is to be expected. Test wells will be gradually deepened to the west in order to test the productive section of the uplift.

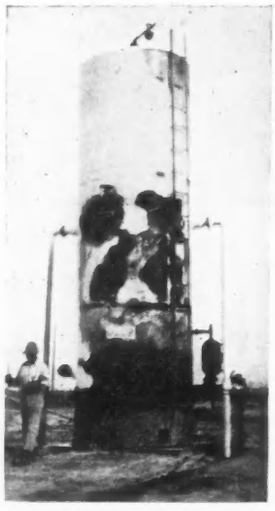
Much of the prospective zone is covered with comparatively recent deposits that are not trustworthy as defining subsurface trends. Adjacent to the western edge of proven production, considerable core work is being done, most of which is based on surface features. Farther west, where productive horizons are at a greater depth, interested companies are shooting various sectors. Particularly is the latter true north of Township 20 south.

The Central Kansas uplift, productive from the siliceous lime at its highs in Rooks, Ellis, Russell, Barton, Ellsworth and Rice Counties, gradually heads out to the northwest, in Decatur and Norton Counties, but extends some distance into Nebraska. The area northwest of present production is favorable territory but the occurrence of structural highs is less frequent than to the southeast in Russell, Ellsworth and Rice Counties. Certain surveys made during the past five years have resulted in the location of uplift structures of the same general character as those now being drilled, but being in unexplored territory near the Nebraska line, and on what is assumed to be the southwest slope of the Central Kansas uplift, they have not received as much attention as might be expected.

South and west of the uplift, the strata gradually tend to deepen into the Dodge City Basin, toward the gas production of Grant, Morton and Stevens Counties. Very few wells have been drilled on structures distinctly disassociated with the Central Kansas uplift in this area, and with the exception of Shallow Water pool of Scott County, most tests have been abandoned in the upper strata or were failures at an average depth of 4800 feet. Shallow Water was discovered by a seismographic survey, and is producing a low gravity oil from the Mississippi chat at 4675 feet. Location of the production of limited extent is near the center of Township 20s and Range 33w.

Present trend of development in this region is marked by 11 wildcat tests located on the southwest flank of the Central Kansas uplift. Newton Development Company's Tenny 1, NW NW SE 19-18s-25w, is drilling below 500 feet, with the Oswald lime expected near 3859 feet. This test is south of Aldrich pool of western Ness County, which is producing from the dolomite. In the same county, Continental Oil Company's Thompson 1, CE½ E½ SW 19-18s-25w, proved oil in the dolomite and is considered an extension of the

BEFORE...and...AFTER



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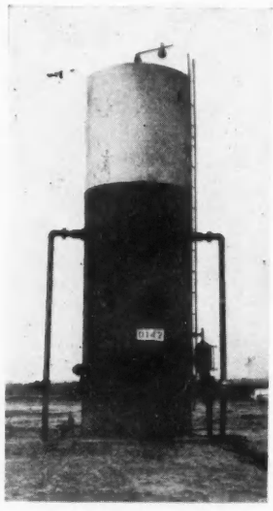


REMOVABLE BOTTOM HOLE CHOKE AND MIXING VALVE

TOP LEFT: Separator on high pressure well before installation of OTIS Removable Bottom Hole Choke and Mixing Valve. Note ice formation. The operators were figuring on elaborate heating arrangement.

TOP RIGHT: Same well, same day, after installation of OTIS Choke and Mixing Valve. Hot gas from the tubing acts as heater to prevent freezing. Permits varying rate of withdrawal. WRITE or WIRE:

OTIS PRESSURE CONTROL, Inc.

Tower Petroleum Bldg. . . . . Dallas, Texas

Houston, Texas — Hobbs, N. M.

Midland, Texas — Oklahoma City, Okla. — Ada, Okla.

Aldrich pool. After making 150 barrels per day after being acidized, operators resumed drilling and are below 4510 feet with oil in the hole.

Central Commercial Oil Company's Wagg 1, NW NW SE 17-13s-21w, is an attempt to extend the Riga pool of Trego County and is coring below 4500 feet. J. J. Hall et al's Deines 1, SE SE SE 12-13s-24w, is a wildcat near Bosna, Trego County, and is drilling below 2200 feet. Edwards County has an interesting wildcat southeast of Centerview and southwest of McCarty oil and gas production. Stanolind Oil & Gas Company and Elwell's Donovan 1, C SE SE 14-26s-18w, set seven-inch at 4445 feet to drill ahead. Nearest production is in the McCarty field, Township 25 south and Range 1 west, where the Pennsylvanian basal conglomerate is productive at 4550 to 4570 feet. Considerable gas accompanies the oil.

Two tests in Haskell County are below 2100 feet. If drilled into the dolomite (Colorado shale), which should be encountered at about 2590 feet, these wells will be of importance in defining the gas production of the southwest part of the state. Kuhn Brothers et al's Nilson 1, SW SW SE, 21-28s-32w, is rigging up standard tools with hole bottomed at 2409 feet, not far above the shale. Helmerick & Payne Drilling Company's Jones 1, CSE 34-26s-34w, is drilling below 2000 feet.

Pacific Midwest Oil Company's Rexford 1, a recent location in northwestern Meade County at NE SE SW, 8-30s-29w, is moving in equipment and preparing to spud. Sinclair Prairie Oil Company's Gentry 1, NE NE NE 1-33-15w, is moving equipment to a location in western Barber County. In Clark County, Olson Drilling Company and Watchorn Company's Morrison 1, CSE SW 17-32-21w, has spudded to 250 feet and set casing.

Besides the general activity of the region west and south of the uplift, Hamilton, Logan and Lane Counties are receiving particular attention with surface and geophysical work being carreid on. Some operators are assembling lease blocks while others are filling in previously acquired holdings.

ENGLISH WILDCATS

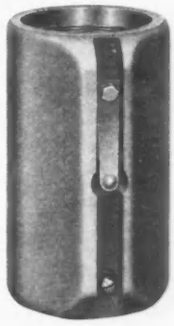
One test drilling and another due to spud

Anglo-Iranian Oil Company was expected to spud in July on a location in the neighborhood of Hanfield, Sussex, England, three miles north of Steyning. Preliminary work, including building a road to the location, began in April.

Anglo-Iranian Oil Company's first English test, located at Portsdown, near Portsmouth, is drilling ahead below 1000 feet, hole making having been somewhat retarded due to inexperience of the crew. The Portsdown wildcat has penetrated the lower limestone, and at latest reports was headed for formations never before tested with the drill in England.

In addition to the two drilling projects, preliminary geological work continues along the southern coast of England at Pevensey, Lewes, Kings Clere, and in Lincolnshire.

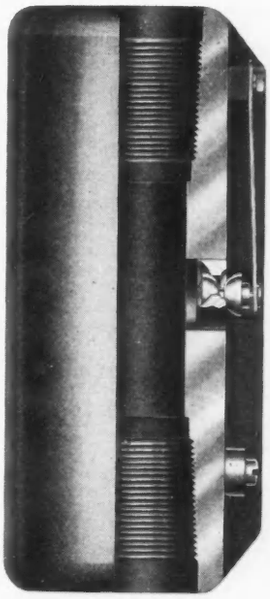
P&T KICK-OFF UNITS for...



1. Bringing In New Wells

2. Pumping Wells

- Bring wells in at working pressure only without bailing or swabbing.
- Clean well of mud and water in less time and without the necessity of high pressures.
- Eliminate gas-locking conditions where pumping wells have excessive formation gas.
- Pumping wells pump easier—lightens the load on pumping equipment. Utilizes and saves formation gas.



INTERNAL TYPE

Internal type P & T Kick-off Unit is recommended for use in pumping wells and small natural flowing wells that are produced through the tubing.

THREE TYPES P&T KICK-OFF UNITS

1. STANDARD TWO-WAY TYPE

With this unit well may be kicked off either through tubing or casing.

2. INTERNAL TYPE

For pumping wells and small wells where packers are used.

3. EXTERNAL TYPE

Recommended for wells where potentials are established on casing flow.

Write for new bulletin which gives complete description and explains ways in which Kick-Off Units may be used.

Price - Trawick Inc.

MANUFACTURERS OF P & T KICK-OFF UNITS

P. O. BOX 295 TELEPHONE 101 AND 63

STROUD, OKLAHOMA

P & T KICK-OFF UNITS STOCKED AT—Oklahoma City, 1111 S. E. 29th St., Tel. 7-1761: Kilgore, Texas—219 So. Commerce, Tel. 179. California Representative: Geo. D. Hopkins, 390 Mira Mar Ave., Long Beach, California, Tel. 874-84.

Public Auction

THE UNIVERSITY OF TEXAS OIL AND GAS LEASES TO BE OFFERED FOR LEASE BY THE BOARD FOR LEASE OF UNIVERSITY LANDS

Pursuant to the provisions of Chapter 282 of the General and Special Laws of Texas, passed at the Regular Session of the Fifty-first Legislature, approved March 29, 1929, and amended by Chapter 174 of the Acts of the Regular Session of the Forty-second Legislature, the Board for Lease of University Lands hereby offers for sale, subject to the right to reject any or all bids, at public auction in Austin, Texas, at the General Land Office on Monday, July 20, 1936, at ten o'clock A.M., the oil and gas rights in and under the following described University Lands.

ECTOR AND CRANE-ECTOR COUNTIES

Tract No.	Block	Section	Description
1	35	5	SW ¼
2	35	6	SW ¼
3	35	9	SE ¼
4	35	10	NW ¼

CRANE COUNTY

Tract No.	Block	Section	Description
5	30	17	NE ¼
6	30	17	SW ¼
7	30	18	NE ¼
8	31	1	NE ¼
9	31	12	NE ¼
10	31	13	NE ¼

ANDREWS COUNTY

Tract No.	Block	Section	Description
11	9	1	NW ¼
12	9	2	NW ¼
13	9	3	NW ¼
14	9	4	NW ¼
15	9	8	NW ¼
16	9	9	NW ¼
17	9	10	NW ¼
18	9	11	NW ¼
19	9	12	NW ¼
20	9	13	NW ¼
21	9	14	NW ¼
22	9	15	NW ¼
23	9	16	NW ¼
24	9	17	NW ¼
25	9	18	NW ¼
26	9	19	NW ¼
27	9	20	NW ¼
28	9	21	NW ¼
29	9	22	NW ¼
30	9	23	NW ¼
31	9	24	NW ¼
32	9	25	NW ¼
33	9	26	NW ¼
34	9	27	NW ¼
35	9	28	NW ¼
36	9	29	NW ¼
37	9	30	NW ¼

ANDREWS COUNTY—Continued

Tract No.	Block	Section	Description
38	9	31	NW ¼
39	9	32	NW ¼
40	9	33	NW ¼
41	9	34	NW ¼
42	9	35	NW ¼
43	9	36	NW ¼
44	9	37	NW ¼
45	9	38	NW ¼
46	9	39	NW ¼
47	9	40	NW ¼
48	9	41	NW ¼
49	9	42	NW ¼
50	9	43	NW ¼
51	9	44	NW ¼
52	9	45	NW ¼
53	9	46	NW ¼
54	9	47	NW ¼
55	9	48	NW ¼
56	12	5	NW ¼
57	12	6	NW ¼
58	12	18	NE ¼
59	12	20	SW ¼
60	12	31	SW ¼
61	12	32	SE ¼
62	13	1	SW ¼
63	13	3	NW ¼
64	13	14	NW ¼
65	13	24	NE ¼
66	13	35	NE ¼
67	13	46	NE ¼

UPTON COUNTY

Tract No.	Block	Section	Description
68	14	8	NW ¼
69	14	20	NE ¼
70	15	2	SE ¼
71	15	3	NW ¼
72	15	4	SE ¼

WARD COUNTY

Tract No.	Block	Section	Description
73	16	26	NW ¼
74	16	26	SW ¼
75	16	27	NE ¼
76	16	27	SE ¼

All leases shall carry a royalty of ⅛ of the value of the gross production of oil and gas therefrom. The Board has fixed an annual delay rental of not less than 50c per acre on each tract offered.

All oil and gas leases sold at this auction will be for a term of five years, or as long thereafter as oil and/or gas is being produced in paying quantities therefrom. Each tract as herein advertised will be a separate and distinct lease from each and all other tracts. There is no limit as to the number of such tracts that may be bid in by any party or company.

Dated at Austin, Texas, this 14th day of March, A.D. 1936.

BOARD FOR LEASE OF UNIVERSITY LANDS.

By: K. H. AYNESWORTH, Chairman.
MRS. I. D. FAIRCHILD, Member.
J. H. WALKER, Land Commissioner.

NORTH TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
M. F. Brown et al, G. R. Campbell 2, blk 11	20	1097
L. T. Burns et al, C. C. Prideaux 1.	*	815
Consolidated Oil Co., Portwood 1-DD, sec 2412	295	1437
Hamer & Scholl, J. D. Smyth 1	*	1002
Hunter & Consolidated Oil Co., W. T. Richardson 1, sec 2425	*	1503
Kittery Oil Co., W. H. Junker 2, blk 12	*	1275
C. B. Long et al, J. H. Turbeville 11, blk 156	10	1526
Nelson & Tucker, Henry Ford 3	10	1002
Phillips & Healey, Wm. White 3	*	705
Shappell Oil Co., M. A. DeMoss 1, sec 2	*	1265
Solo Oil Co., E. A. Hausler 1-C	*	1155
Earl M. Stilley et al, H. O. Prideaux 1-A	*	710
E. J. Stump et al, L. F. Wilson 8-B, sec 1	*	1530
CLAY COUNTY—		
Golding & Cochran, Ben Nutter 1, blk 30	*	2403
COOKE COUNTY—		
Anderson-Kerr Pet. Co., F. A. Bruhlmeyer 2	768	2022
Hardin Oil Co., J. G. Bonner 1	*	2308
Harrison & Dillard, R. W. Trew 6	175	1236
K. O. T. Oil Co., A. J. Dennis 6	*	1468
Mudge Oil Co., Johnson 14	27	1120
C. Newburn et al, Dotson 1	*	1707
J. C. Shaffer et al, Wilson 1	782	2068
Vindicator Oil Co., Walterscheid 7	10	795
Woodbine Oil Co., Potter 1	*	990
JACK COUNTY—		
R. D. Compton et al, Henderson 4, blk 2	4	705
Lewis Prod. Co., Birdwell 2	50	2999
Geo. B. Ray et al, L. J. Hester 2	350	3006
MONTAGUE COUNTY—		
Arco Oil Co., M. Salmon 4-D	35	999
WICHITA COUNTY—		
Douglas Prod. Co., L. P. Douglas 25-A, sec 4	*	312
King Oil Co., Waggoner Est. 10-H	400	1985
Mogren & Anderson, E. E. Goetze 37, sec 2	*	173
E. E. Goetze 39, sec 2	1	195
Rathke Oil Co., Murray 10, blk 127	20	862
The Texas Co., Waggoner Est. 427, blk 148	8	1091
Waggoner Ref. Co., Waggoner Est. 8-AA, blk 148	110	1604
Waggoner Est. 9-AA, blk 148	50	798
Worth Oil Co., J. L. Jackson 6, blk 16	6	705
WILBARGER COUNTY—		
Barkley & Meadows, Waggoner Est. 18-C, sec 5	60	1893
Fain-McGaha Oil Corp., Waggoner Est. 13-Y, sec 43	40	2403
King Oil Co., Waggoner Est. 4-N, sec 104	124	1547
Lido Oil Co., Waggoner 12, sec 50	15	2739
Phillips Pet. Co., Waggoner Est. 3-V, sec 44	50	2348
Staley-Wynne & Co., Waggoner Est. 9-E, sec 25	15	1915
YOUNG COUNTY—		
Alexander & Beavers, G. B. Hamilton 5, sec 3401	45	902
Associated Developers, Inc., W. P. Terrell 1, sec 285	*	3011
L. T. Burns & Stilley, J. D. Spencer 1, sec 1396	*	864
Duncan et al, Benson 14, sec 1391	200	907
Golding & Cochran, E. E. Hall 1	*	756
D. S. Johnson et al, E. E. Hall 8	*	785
Jack Latson et al, Wilborn 1, sec 1588	*	1331
Jerome McLester & Lupton, G. M. Gibson 1	467	3619
Moran & Duncan, Arthur Heatherly 1, sec 1461	*	886
Nelson, Hubbard & Parker, S. A. Haley 1, sec 295	*	820
E. C. Reed et al, Cunningham 2, sec 3404	*	535
The Texas Co., R. A. Stephens 1, sec 1985	¶4.6	4083
Norma Wagner et al, G. B. Hamilton 1, sec 3401	*	1041
R. J. Watson et al, M. Watson 2, sec 248	*	700

*Failures; †Junked; ¶Million cu. ft. gas.

Extend Grand Falls

WARD COUNTY WILDCAT STARTS DRILL CAMPAIGN

WEEKLY STAFF REPORT

Midland, Texas.—Heavy production in the north portion of the Grand Falls district, Ward County, was advanced slightly more than one mile to the west by completion of Sid Richardson Oils, Inc.'s, S. Hathaway 2 for a potential rating of 4515 barrels natural from 4 pay zones in sandy-lime formation between 2439 feet and 2568 feet. The well is near center of the northeast line of H.&T.C. Section 37, block 34, and is bottomed at 31 feet above sea level. Twin location drilled last May was completed after losing drill pipe in big gas pay at 2275 feet.

Spectacular performance of Hathaway 2 has touched off an active drilling program for the immediate area. Gulf Oil Corporation has made 2 locations on its Estes 640-acre tract, adjoining to the east, and is preparing to test Estes 1, located in the east corner of the tract, having drilled to 2575 feet.

Wildcat activity in West Texas centers largely upon a group of tests in the north portion of the Permian basin. In Gaines County, Humble Oil & Refining Company's Eubank 1, C SW SW PSL Section 6 block AX, logged top of anhydrite at 1790 feet and first salt at 1842 feet with an elevation of 3365 feet, and was drilling below 3600 feet. This prospect is registering a higher structural position than Landreth Production Corporation, S. Kirk 1, recent wildcat oil strike situated 8 miles to the southeast.

TEXAS PANHANDLE

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
GRAY COUNTY—		
Claude Drl. Co., O. Huff 1	¶19.8	2700
Southwest Prod. Co., T. B. Cobb 2-A	¶32	3290
Stanolind, T. B. Cobb 9-B	645	3339
HUTCHINSON COUNTY—		
J. E. Crosbie, Inc., H. W. Pitts 12	745	2977
Gulf-Panhandle Ref. Co., Dial-Perkins 59	198	3053
Niapa Oil Co., W. B. Haile 2	451	3083
Harry Stekoll et al, Erle Thompson 1 sec 5	*	3103
U-Tex Oil Co., R. C. Ware 4-B	633	3175
MOORE COUNTY—		
Anderson-Kerr Pet. Co., O. B. Burnett-Conoco 1	¶45¼	3235
C. R. Jones-Conoco 1	¶36¼	3223
WHEELER COUNTY—		
DuMar O & G Co., J. W. Grogan 3	¶33.7	1860
Skelly Oil Co., J. A. Belew 3	20	2580

*Failures; †Junked; ¶Million cu. ft. gas.

Yoakum County has two prospects under way. In the southwest section of the county, Bahan, Rhodes and Fitzpatrick's Alice Henard 1 was drilling below 4000 feet, having logged top of anhydrite at 2279 feet, salt series at 2410-2965 feet, with an elevation of 3691 feet. Top of Yates sand was called at 3083 feet. Elliott Roosevelt and Lou Stogner's Roosevelt-Gogins 1, situated in the north central portion of the county, was drilling below 2500 feet. Top of anhydrite was logged at 2397 feet, and first salt at 2390 feet, with an elevation of 3712 feet. Southwestern Terry County is slated to receive a 5500-foot test on a 16-section block taken by Uscan Oil Company, Oklahoma City, with drilling to start by August 1 on a location tentatively assigned to PSL Section 54, Block K.

HAMILTON COUNTY

Second gas well in Marble Falls horizon

Ranger, Texas.—Seaboard Oil Corporation has completed its second gasser from the Marble Falls lime horizon on its Pottsville 11,000-acre block in northwestern Hamilton County, and is moving heavy rotary rig to drill an Ellenberger lime test in south central Erath County between Dublin and Alexander. The latter prospect will be drilled on the L. V. Garrett 500-acre tract, R. McKinney Survey, near center of 6000-acre block assembled following geophysical work in the area.

Hamilton County attained its second producer when Seaboard Oil Corporation's Julia Dawson 1, near SWc BBB&C Ry. Survey, tested about 10,000,000 feet of dry gas daily through 20-shot perforations of 7-inch casing at 2558-2565 feet. This well originally passed up the Marble Falls gas zone to try for production in Ellenberger limestone, topped at 2991 feet, with an elevation of 1445 feet. The latter showed a small trace of oil in the upper section of the Ordovician member, but carried sulphur water below. The company attempted to continue through the Ellenberger to test the Hickory sand section of the upper Cambrian, but drill pipe was lost at 5345 feet while in the lime.

Rhodes & Phillips Petroleum Company's Williams 1, situated several miles northeast of the Cross Cut shallow oil field, Brown County, showed sulphur water when tested in the Ellenberger lime zone at 3296 feet, but succeeded in making a 3,000,000-foot gasser after plugging back to 3167 feet. Production was developed from sands at 2764-71 feet and 2995-99 feet, with 6⅝-inch pipe cemented at 2740 feet.

YOUNG COUNTY

Wichita Falls, Texas.—Jerome McLester & Lupton's G. M. Gibson 1, near south center of W. H. Baker Survey A-1376, extended production in the Rathke field, Young County, about one mile to the northwest with a natural flow of 467 barrels daily from lime at 3604-3619 feet. Considerable development work has been carried on in the Rathke field in recent months, and completions have included some of the largest producers in the county. Deeper lime and sand horizons found in the main portion of the field are separated by a barren formation that makes it possible to produce oil from both horizons with a single well.

WEST TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CRANE COUNTY—(McCamey Field)—		
Fred T. Hogan et al, E. S. Hughes-Texas Co. 1	441	2060
GAINES COUNTY—		
Landreth Prod. Corp., W. H. Kirk 1	107	4820
GLASSCOCK COUNTY—		
Conoco-Group One Oil Corp., Settles 7-S	182	1241
HOWARD COUNTY—		
Conoco-Group One Oil Corp., Settles 15-A	485	2545
M. Sam Goldman et al, L. C. Denman 1	940	2823
JONES COUNTY—		
Bridwell Oil Co.-L. Fikes, Jennings 3	*	2066
Thos. D. Humphrey, H. Dorsey 13	500	2223
PECOS COUNTY—(Netterville Field)—		
Worth Drl. Co.-Roy Charlesworth, Brandenburg 1	205	2350
PECOS COUNTY—(Torborg Field)—		
Cardinal Oil Co., Tippett-California Co. 2-I	11	397
UPTON COUNTY—(McCamey Field)—		
Cardinal Oil Co., E. W. Shirk 2	489	2200
Geo. E. Farley et al, A. M. Mayhew 1	*	2365
Pure Oil Co., E. S. Hughes 5	194	2323
W. J. Rhodes & J. C. Ward, Phillip Lane 1	70	2130
TP Coal & Oil Co., Milton Shirk 6	817	2180
G. R. Thomas & Burk, J. W. Robbins 4	509	2210
UPTON COUNTY—(McClintic Field)—		
Int'l Pet. Corp., H. L. McClintic 4-A	218	3024
WARD COUNTY—		
Atlantic O. P. Co., C. L. Monroe 3	422	2550
Elliott & Hardesty, W. H. Lepp 1-B	†	2610
Great States Oil Corp., Himmel-Lee 1	121	2435
Hal C. Peck-Atlantic O. P. Co., J. S. Reynolds 2	*	2357
Sid Richardson Oils, Inc., Hathaway 2	4512	2568
WINKLER COUNTY—(Brown-Altman Field)—		
Fox-Butler & Jeffries, Brown-Altman 4	35	3180
Gulf, Oscar Clapp 3	¶3.8-527	3110
Humble, J. B. Walton 6-B	150	3152
WINKLER COUNTY—(Sayre Field)—		
Gulf, L. Daugherty 4	1593	3000
Humble, J. F. Howe 9	1040	2992
Magnolia, J. B. Walton 22	128	2932
State-Walton 2	121	3352
Tide Water, J. B. Walton 5	¶5¼-1237	2915
TP Coal & Oil Co., L. Daugherty 12	1267	2931
WINKLER COUNTY—(Wildcats)—		
R. H. Henderson et al, R. A. Leck-Gulf 1	†	3187
Fred Hyer-Joe C. Maxwell et al, Cowden Cattle Co. 1	*	4891

*Failures; †Junked; ¶Million cu. ft. gas.

No Rush at Talco

OPERATORS NOT HURRYING TO DRILL LOCATIONS

WEEKLY STAFF REPORT

Mount Pleasant, Texas.—Talco operators are not as eager to develop their holdings as permit applications would indicate. Approval has been given by the Texas Railroad Commission for the drilling of about 450 tests, including more than 100 within the little town of Talco, and hearings have been set to pass on a large number of new requests. More than 125 independent units have been authorized to drill from one to 75 tests on their respective holdings. Majors control the bulk of the acreage, but only three have taken active part in development, and their permit applications have been restricted to tests starting up. There are now 18 oil producers in the 4300-foot Paluxy sand, and about 20 active operations, exclusive of derricks standing.

Irregular performance of completions considered favorably situated upon the faulted structure to yield average size producers has caused the ambitious operators to play for time and observe results of tests now underway. Potential flow of new completions averages less than 1000 barrels, and the absence of any appreciable amount of flowing pressure and free gas possibly forecasts a short period of natural flow. Earlier estimates that gave the Paluxy sand a recovery of 15,000 barrels per acre, more or less, have not been reduced, except for edge leases.

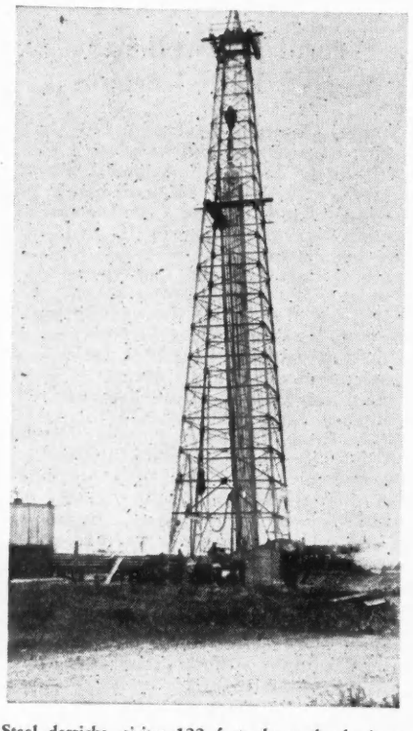
It is evident to operators that the program of development, involving an average well density of about one well to three acres on independent leases, said estimate being based upon approved permits, will not be profitable, unless a more productive and better grade of oil is found in a lower section of the Trinity. The Paluxy production, averaging 25 gravity with a high sulphur content, now commands a posted price of 60 cents per barrel at the well. Shipments are made by tank cars, although Humble Pipe Line Company will build an eight-inch line into the field soon to take care of production being built up by Humble Oil & Refining Company and outside purchases by the latter.

Locations made on paper for Talco continue to sweep westward across Franklin County, and a number have been approved for town lot drilling at Hagansport, and to the south in the A. Emanuel Survey.

East Trend Checked

Activity to the east of production is being held in check pending the completion of Stroube and Stroube's S. E. Stratton 1, center of north line of a 50-acre lease, MEP&P Ry Survey, about 3½ miles east of flowing production. A decisive depth was due late last week, as drilling was in progress at 4270 feet, or 3929 feet sub-sea, in formation tentatively identified as the Fredericksburg shaly-lime overlying the Paluxy.

Lucey Petroleum Company et al's Crawford 1, third completion for the 25.23-acre lease, and situated on the east limits of flowing production in Franklin County, was completed the past week with a natural flow of 27 barrels oil per hour through open tubing from Paluxy at 4157-4300 feet. The hole is bottomed at 3932 feet sub-sea. Humble Oil & Refining Company's A. P. King-Hughes 2, south offset to the lease, cemented seven-inch pipe at 4129 feet, and was drilling in, according to reports. McAlester Fuel Company's A. M. Crawford 2, SEc of a 25.23-acre lease, and east of the above producer, logged Paluxy at 4159-4304 feet, and has landed casing to complete. Lawrence S. Flannery, Inc. and Stroube's J. L. Hedrick 1, NEc of 66.08-acre lease, MEP&P Ry. Survey, most westerly outpost for Franklin County, logged top of Georgetown lime at 3455 feet, and was drilling at 4060 feet. Humble Oil & Refining Company is rigging up to drill P. J. Dawson 1, SEc of 80.45-acre lease, B. H. Epperson Survey, situated on a tract adjoining to the north. These tests are about two miles from production on the Crawford tract. Joe DeGrazier et al's F. M. Batts 1, NEc of a 30-acre lease, F. M. Batts Survey, A-688, located to the southeast, was drilling at 2850 feet, with an elevation of 356 feet.



Steel derricks, rising 122 feet above the horizon at Talco, are favored by contractors and operators over the comparatively short derrick used in the East Texas field, because of frequent change of bits while negotiating the Georgetown lime formation. The above view was taken at Haynes B. Ownby Drilling Company's F. Jones 1, first producer in the Talco townsite section of the field with the hole bottomed at 4360 feet.

J. B. Bond and J. Z. Werby's T. J. Sanders 2, near NEc of a 42.3-acre lease, W. F. Dyer Survey, tested 3500 feet of salt water and 700 feet of oil from Paluxy at 4198-4344 feet, with an elevation of 359 feet, after cementing pipe at 4190 feet. It is slated to be abandoned, according to reports. This test furnished a surprise in yielding water, as the hole is bottomed at 3985 feet, or supposedly a safe margin above the water table on the south flank of the structure. Earl Bateman and Al Ravenger's E. L. Phillips 1, NWc of a 38½-acre tract, Wm. Bridwell Survey, and considerably further south of the fault plane, successfully excluded water in plugging back from 4361 feet. to 4343 feet. The hole filled with oil, but would not flow when 5½-inch pipe was set at 4284 feet after plugging back. It has an elevation of 358 feet.

Red Iron Drilling Company, Dean Bros. and Adkisson's Cornelius 1, NWc of a three-acre lease on the south of Talco townsite, flowed by heads via tubing when tested in Paluxy at 4191-4350 feet, with an elevation of 370 feet. Porter Bros. et al's W. T. Sullivan 1, NEc of a four-acre lease, I. P. Stern Survey, logged top of Paluxy at 4188 feet. G. Stratton, Waco, et al's J. F. Barton 1, also on the south border of the town, was flowing 30 barrels fluid per hour while cleaning itself at 4350 feet, with packer set on tubing at 4300 feet. Sutton & Hawkins' W. H. Gray 1, C Lot 15, Block 17, Talco, was flowing in pits for a production test at 4345 feet, or 3983 feet sub-sea.

Nivla Oil Corporation's J. N. Kelly 1, NEc of a 15.76-acre lease, J. Salmon Survey, is rigging up to pump from Paluxy at 4228-4360 feet. It was drilled to 4012 feet sub-sea. It is the deepest producer in the field, and apparently did not reach water.

R. C. Horne, Dallas, et al's Barton 1, north end of a three-acre lease, adjoining Talco, flowed 40 barrels hourly through tubing on preliminary gauge at 4347 feet, or 3986 feet below sea level. Allen M. Peairs and B. C. Morrison's L. Sanders 1, C Lot 1, Block 30, Talco, gauged 25 barrels hourly through tubing from sand at 4188-4350 feet, with an elevation of 371 feet.

Talco Pipe Line Company has succeeded the Independent Crude Oil Trading Company as the operator of the only crude buying unit in the field, following the disposal by E. B. Germany, Dallas, of his one-fourth interest to Capt. J. F. Lucey and Ralph Fair. An exclusive franchise for gathering oil in Talco townsite for 25 years is now held by the former company.

Testing Wildcat

EXPECT HOPKINS COUNTY PALUXY TO PRODUCE

Tyler.—Production test was in progress late last week on Dilworth S. Hager, W. P. Luse and Russ Petroleum Company's J. E. Worsham 1, near center of east line of the A. O. Wetmore Survey, Hopkins County, after logging approximately 20 feet of saturated oil sand in Paluxy section of the Upper Trinity in drilling to 4500 feet, or 4058 feet below sea level. This prospective producer is in the Talco-Mexia fault zone, with the same type of structure as the Talco field. Confident of making a producer, the owners elected to cement 8⅝-inch casing at 4435 feet without making a drill stem test, and plugs were drilled late last week preparatory to setting liner and tubing.

Top of Paluxy was logged at 4467 feet by the Hopkins County prospect. This affords an interval of about 867 feet below the top of the Georgetown lime. Saturated sand recovered from Worsham 1 is of a lighter color than the pay zone at Talco, which lies about 16 miles east by north. The course of the fault plane between the two areas is definitely outlined by numerous failures drilled to the Woodbine in previous years.

Owners of the Hopkins County wildcat have designated Sulphur Bluff as the name of the area, as the well is about 2½ miles south of Sulphur Bluff, an inland town with several stores and a bright future should attractive production be found in the Paluxy.

Lease ownership around the Sulphur Bluff structure is about equally divided among independents and majors, and very few leases are less than 40 acres in size. A conservative development program will follow in the event of commercial production.

Drilling was in progress the past week on four widely scattered Trinity tests in the East Texas Woodbine sand belt. In northeastern Kaufman County and adjacent to the Talco-Mexia fault zone, R. P. Lester, Colton et al's Barrow Brothers 1, J. D. Taylor Survey, was drilling below 3880 feet, logging lower Woodbine sand and shale. This test has not cut through the fault plane to the upthrow side, according to reports. In southeastern Rusk County, Pure Oil Company's W. H. Faulkner 1, Wm. Elliott Survey, Mount Enterprise structure, reached the Travis Peak section of the Lower Trinity at 7323 feet, or 6760 feet below sea level, and was in hard sand at 7485 feet with progress reduced to about one foot of new hole daily. Recovered cores from the Travis Peak show oil discoloration under ether tests.

Tide Water Oil Company and Seaboard Oil Corporation's J. N. Edens 15, second deep project for the Cayuga field, Anderson County, was logging Georgetown lime at 4980 feet, having entered this formation at 4619 feet, or 4306 feet sub-sea. Based on this marker, the test is 94 feet lower on structure than the partnership's discovery well of the Trinity pay. Gulf Oil Corporation's M. J. Ross 1, Camp Hill area, Anderson County, reached the base of the Georgetown lime near the 6550-foot level, and was drilling below 6600 feet.

Wildcat Strike

FIRST WOODBINE SHOW IN HOUSTON COUNTY

Palestine, Texas.—Houston County's first producer from the Woodbine sand was due to be completed late last week after having proved capable of a prolific flow of gas with a light spray of distillate when the formation tester was used at 6033 feet and again after deepening to 6038 feet, or 5556 feet below sea level.

This pending wildcat completion was drilled by Ellison, McBride, Haberle & Thornton at the center of the northwest 40 acres of the J. E. Bean 160-acre tract, Eli Steadman Survey, about 1½ miles northwest of Grapeland, and about 15 miles south of the Camp Hill field, nearest producing area. The latter yields high gravity oil from Sub-Clarksville and Woodbine sands, both found between the 5000- and 5200-foot levels.

Gas yield from Bean 1 increased to an estimated volume of 50,000,000 feet daily when the second formation tester was used at 6038 feet, thereby assuring a commercial gasser and a record of being the deepest Woodbine producer in the East Texas Basin area. Seven-inch pipe was cemented at 6029 feet, near the top of the gas zone. Austin chalk was logged at 5610-5961 feet, with an interval of about 66 feet of Eagle Ford shale and sand section overlying the gas pay. Wells that produce from the Sub-Clarkesville zone in the Camp Hill field generally log the latter sand series immediately below the Austin chalk. The presence of white distillate in the Houston County prospect brightens the prospects for an oil producer resulting from deeper penetration of the pay sand.

Drilling was under way below the surface pipe on Walter L. Goldston and Humble Oil & Refining Company's B. W. Burns 1, northwest Houston County wildcat, according to late reports. It is located near center of the west 20 acres of a 50-acre tract, Juan de la Reviere Survey A-49, near Reynard.

Hunt Production Company's J. E. McGaughy 1, near the center of the southwest line of a 77.6-acre lease, Simon Sanchez Survey 1-11, Anderson County, was listed as a failure for the northeast portion of the Long Lake field late last week after testing salt water in Woodbine at 5267 feet, or 5047 feet below sea level. The last three feet of sand carried oil saturation, but no oil was recovered on drill stem test. This outpost failed to encounter the usual heavy gas production above the oil zone, and will be abandoned.

EAST TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
D. K. Caldwell et al, B. Fox-State 2, (8.2-ac)	7000	3746
W. H. Gant-Garvin-Wegener, Harris 15 (394.58-ac)	800	3557
Georgian Corp.-S. S. Nossek, Woods 1 (9.45-ac)	2000	3799
Humble, R. E. L. Silvey 54-A (458.97-ac)	6000	3756
Hunt Prod. Co., Smith Wilson 9-A (61.29-ac)	8500	3776
R. J. McMurrey et al, H. Roberson 14 (145.8-ac)	3000	3805
Marathon, C. L. Graham 22, Acct. 2 (134.7-ac)	7100	3656
T. W. Medlin et al, Mayfield 6 (82.91-ac)	8000	3823
Merry Bros. & Perini, Inc., A. Kelly 4 (90-ac)	6000	3687
Perot Oil Corp., H. C. Dickerson 2 (40-ac)	360	3614
Pet. Marketing Corp., J. E. Arnold 5 (9.29-ac)	5500	3700
Retsal Drl. Co., H. W. Coates 5 (54.85-ac)	140	3580
Royal Pet. Corp., T. W. Wooley 1-B (5-ac)	100	3614
Sinclair Prairie, Bradford 7 (35½-ac)	700	3675
Texas Gulf Pet. Co., Hodnett-Melton (Sun) 12 (134.84-ac)	4600	3696
C. K. West et al, L. S. Sartain 4 (21-ac)	500	3835
Wheless Oil Corp., G. Patterson 9 (172.64-ac)	2400	3698
KILGORE AREA—		
G. G. Baggett et al, C. L. Still 3 (10.03-ac)	480	3557
Leo Bell et al, C. N. Dickerson 1..	15	3564
J. Beren et al, M. Kennedy 5 (20-ac)	320	3680
Gen'l American Oil Co., H. Sexton-Hurtle 4-B (102-ac)	400	3673
Gulf, M. Charles 12 (71.06-ac)	6400	3626
S. Hilburn 85 (274.32-ac)	7000	3590
Humble, R. H. & W. L. Laird 11 (61.6-ac)	7500	3628
O. Roberson 6 (57.05-ac)	190	3694
Lone Pine Oil Co.-Carter-Jones, S. Clary 3 (6.7-ac)	75	3547
S. Clary 4 (6.7-ac)	1500	3547
Magnolia, A. F. Sheppard 1 (415.8-ac)	7000	3579
Marion Oil Co., C. N. Dickerson 2 (10½-ac)	120	3538
B. F. Phillips et al, Greggston 2 (51-ac)	360	3603
Sinclair Prairie, King 60-A (366.7-ac)	6500	3467
King 17-B, Tr. 2 (111.8-ac)	8000	3490
Sun, Wm. Pentecost 15 (131½-ac)	8400	3628

[*Continued on page 144*]

[Continued from page 143]

Company, Well and Location	Init. Prod. Bbls.	Depth
D. M. Wiley-C. M. Cope, J. V. Borders 1 (5-ac)	10	3711
Winston Oil Corp., P. Jones 11 (58-ac)	2000	3705
John Wrather-G. D. Painter, G. H. Morris 1 (10-ac)	800	3663
LONGVIEW AREA—		
Arkansas F. O. Co., Burnsides 37 (209-ac)	9400	3507
J. D. Davis 4 (30.8-ac)	7000	3607
J. A. Whittaker 17 (75.52-ac)	8000	3540
Atlantic O. P. Co., J. R. Fenton 3 (18-ac)	8000	3641
Cox & Jake Hamon, Ed. Lacy 7 (50-ac)	7600	3575
Eastern Texas Pet. Co., D. F. Smith 2-B (79-ac)	*	3618
Gulf, M. O. Sheppard 45 (335-ac)	5800	3503
Humble, W. R. Hughes 43 (245.6-ac)	3600	3654
R. F. Lane Drl. Co., J. M. Hamby 1 (16-ac)	*	3647
P. F. Rutledge-C. W. Boller, P. Todd 10 (155-ac)	1000	3681
Selby O. & G. Co.-Lewis Prod. Co., Snavely 27-B (361.2-ac)	9000	3572
Snavely 32-B (361.2-ac)	5600	3577
Showers-Moncrief-Farrell & Co., D. B. McPherson 1 (4.13-ac)	9600	3547
Stanolind, M. B. Harley 8-A (41.51-ac)	5500	3664
Stuckey-Thrasher 17-B (80-ac)	5700	3621
Stanolind-Atlantic-Sun, M. Hays 14 (102.63-ac)	7200	3578
Stanolind-Tide Water-Conoco, Flewellen 19-C (400-ac)	5700	3656
Sun, O'Byrne 14 (310-ac)	500	3721
Superior Oil Co., L. C. Ingram 20 (163½-ac)	11,000	3558
Tide Water-Frank Buttram, Nicholson 21 (800-ac)	3200	3664
ANDERSON COUNTY—(Long Lake Field)—		
Hunt Prod. Co., J. E. McGauhy 1 (77.6-ac)	*	5267
ANDERSON COUNTY—(Cayuga Field)—		
Cortex Pet. Co., J. W. Barton 2 (29.89-ac)	3000	4048
Tide Water-Seaboard Oil Corp., G. W. Ware 14 (571.65-ac)	¶60	4098
CHEROKEE COUNTY—(Rusk Pool)—		
T. J. Wood et al, J. E. Huggins 1 (80-ac)	116	5186
FRANKLIN COUNTY—(Talco Field)—		
Lucey Pet. Co., et al, A. M. Crawford 1 (25.23-ac)	700	4300
HENDERSON COUNTY—(Cayuga Field)—		
Roeser-Pendleton, Inc., A. J. Thompson 1 (200-ac)	2000	4099
TITUS COUNTY—(Talco Field)—		
A. M. Peairs & B. C. Morrison, L. Sanders 1, blk 30	600	4350
VAN ZANDT COUNTY—(Van Field)—		
Humble, J. R. Oliver 5 (59-ac)	6500	2945

*Failures; †Junked; ¶Million cu. ft. gas.

NOT RETARDED

Tyler, Texas.—The East Texas field recorded 56 completions the past week, including 2 failures drilled in the north portion of the structure. Independents were credited with 33 of the new wells.

Reduced production allowable given the field on June 21 has not retarded development work, and current report on drilling operations reveals about 100 rigs on the active list.

Twelve of the completions reported the past week failed to flow when given initial production tests, and a total of 11 producers did not penetrate more than one foot into the Woodbine sand zone because of the close proximity of bottom hole water in their respective areas.

It is estimated that sufficient motor fuel can be obtained from United States deposits of bituminous coal and oil shale to supply the nation for centuries.

Five New Fields

IN SAN PATRICIO, ARANSAS, NUECES, JIM WELLS, CALHOUN

SOUTH TEXAS — WEEKLY STAFF REPORT

Corpus Christi.—A deep Nueces County discovery led to a most successful wildcatting week in the Corpus Christi district. San Patricio, Aransas, Nueces, Jim Wells and Calhoun counties were included in the list of areas finding production in heretofore unproven spots.

M. F. Hurlburt's I. F. Phillips 1, 9½ miles southeast of Corpus Christi, Nueces County, flowed 184 barrels of 43.2 gravity oil the first eight hours through ¼-inch choke, or at the rate of 552 barrels per day. It registered casing pressure of 810 pounds and tubing pressure of 525 pounds. On a later gauge the well showed 28 barrels of fluid per hour through ¼-inch choke and 15 barrels per hour through 3/16-inch choke showing tubing pressure of 900 pounds and casing pressure of 750 pounds. It was still making 5 percent wash water.

This well, located in the center of Lot 9, Section 48, Flour Bluff Encinal Garden tracts, definitely opens a new field fronting Corpus Christi Bay and a short distance from Laguna Madre and Cayo del Oso. The field undoubtedly will be known as Flour Bluff.

Humble Oil & Refining Company holds a one-half interest, Barnsdall Oil Company one-fourth interest, and C. F. Hurlburt one-fourth interest in the block of some 6000 acres and the discovery well. It was drilled to 7503 feet, ran an electric formation tester and plugged back to about 6850 feet where casing was set. Perforations were made at 6633-43 feet and 6647-57 feet. The top of Discorbis was logged at 5335-5418 feet, Heterostegina at 6036 feet, Marginulina at 6325 feet. The producing horizon was encountered in the lower Marginulina.

Plymouth Oil Company made a deep test out of its fiftieth well on the E. H. Welder "C" lease in the Plymouth field, San Patricio County, the result being that the company has established the third oil sand for the northern portion of the field. The well flowed 250 barrels of oil per day through 5/32-inch choke from sand at 5872-81 feet, the pressures being 600 pounds on tubing and 700 pounds on casing. The well, in the northern part of the field, is the deepest producer in this sector. More than three miles to the south and across a graben, Magnolia Petroleum Company established 5900-foot production, which covered only a small area. It was not determined whether or not this sand would produce in the northern structure.

Humole Oil & Refining Company and Plymouth Oil Company's E. H. Welder 2 extended the Heyser Field, Calhoun County, more than a mile to the southwest when it was completed in sand at 5454-73 feet. The well is the second producer in the field. It was still cleaning late in the week through a 3/16-inch choke and showing about 5 barrels of fluid per hour, the greater portion of which was oil. The pressures were 950 pounds on casing and 750 pounds on tubing. A rather aggressive development campaign is immediately planned by several companies holding close-in acreage.

On the southeast edge of the Edna Gas field, Jackson County, Steinberger Petroleum Corporation late in the week was coring for the sands below 5000 feet in S. G. Druschell 1. This field has only one deep producer, that being a wet gasser at 5381 feet. The new deep test, however, is primarily directed to Cockfield sands below 7200 feet.

Mills Bennett's J. K. Ordner 1, Section 410, about 2/3 mile west of the Clarkwood production in the Saxet field, Nueces County, drilled to 5957 feet without obtaining results in the deep sand. It has plugged back and is completing in the 4100-foot horizon. The well cored gas sand at 4092-99 feet and oil sand at 4100-10 feet. It will provide a sizeable extension to that production.

A great deal of work is being centered around the 5800-foot Frio sand production in the Saxet field. In addition, there is considerable work to the 4400-foot sand in the vicinity of Clarkwood and the 4000-foot sand in the Saxet Heights (Corpus Christi) field.

Mills Bennett's Fred Walzell, seven miles south of Refugio in Refugio County, cored at 5307-20 feet, apparently in sand, but lost the core. It showed some gas at this level, possibly in the Frio. The well is shut down for repairs at 5372 feet.

La Jita Corporation's W. E. Pope 1, southwest corner Section 20, Jim Wells County, two miles northwest of the discovery well of the deep sand in the Bentonville-King area, is flowing at the rate of 120 barrels of oil per day through ⅛-inch choke and showing pressures of 1700 pounds on tubing and 1825 pounds on casing. Plans are to install bottom-hole choke to reduce the gas volume. The well, however, is showing an excellent oil content. Sand was cored at 5330-51 feet and casing set at 5340 feet, cutting off the upper gas. More than a mile southwest of this well and northwest of the discovery deep well of the field, Stanolind Oil & Gas Company's Frame & Bowers

1, Section 14, had a gas sand at 5397-5406 feet, oil sand at 5406-21 feet, and shale at 5421-25 feet. On a drill stem test at 5397-5425 feet the well developed 1900 feet of fluid and no pressure in 15 minutes. The fluid was largely salt water, but considerable oil was mixed in the test from top to bottom. It is waiting on orders. One mile southwest of the discovery deep producer, Stanolind Oil & Gas Company is coring in shale at 5675 feet in J. J. Thompson 1.

Buckingham Oil Company's McCampbell Ranch 1, which apparently is the opener of a new Aransas County field, is preparing for completion. The well originally drilled to 7501 feet, ran an electric formation tester and plugged back to 6534 feet where drill stem test was attempted with sidewall packer. The well blew out, ran wild and flowed considerable oil and gas. It finally was killed, part of the drill stem recovered, and the hole sidetracked. It had cored the sand and set casing at last report. Several locations to the west, but in San Patricio County, Atlantic Oil Producing Company's Maryland Trust Company 1 was drilling below 5500 feet.

Continental Oil Company's Vandenberg (Austin) 1 in the Seadrift heaving shale area of Calhoun County, was ready to resume drilling below 11¾-inch casing set at 6598 feet. Total depth is 6614 feet. A special type 8⅝-inch casing drill pipe is to be used.

DUVAL STRIKE

Small well opens field in southwest part

Laredo.—Rogers & Rogers are building storage for Rita S. de Pena 1, wildcat in the southwestern corner of Duval County, preparatory to making a production test. While the producer apparently is going to be very small, it does open a new field for the Mirando district.

The well encountered sand at 2850-62 feet and set 7-inch casing at 2845 feet. The oil is 43 gravity. While swabbing, the well recovered several barrels per hour.

A couple of lease deals in the extreme southwestern portion of the Seven Sisters field, Duval County, were completed when Darby Petroleum Corporation acquired 160 acres and Charles Sollards acquired 120 acres out of Section 102 from the J. F. Welder Estate. The total consideration was reported to be $280,000, of which a portion was in cash and the remainder deferred oil payments.

Darby Petroleum Corporation defined the above field to the southwest when Welder 3-A was a failure in the Mirando sand at 2655-72 feet. It previously showed 25 pounds pressure on a drill stem test in the Government Wells sand, which was tight and hard. The field is rapidly being defined in this direction.

Charles T. Kleiner et al's Chernoskey 1, Section 226, which gives promise of extending the Loma Novia sand production in the Seven Sisters field ¾ mile to the northwest, is perforating

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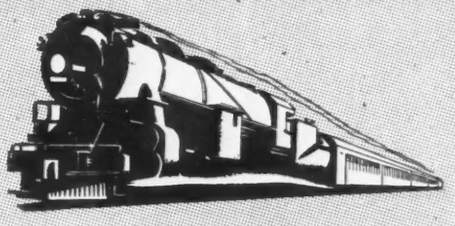

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Westbound

	Sunset Limited	Argonaut
Lv. New Orleans	11:20 A.M.	11:00 P.M.
Lv. Lake Charles	5:01 P.M.	5:28 A.M.
Lv. Beaumont	6:24 P.M.	6:59 A.M.
Lv. Houston	8:40 P.M.	9:20 A.M.
Lv. San Antonio	2:20 A.M.	3:05 P.M.
Ar. El Paso (M.T.)	6:55 P.M.	8:45 A.M.
Ar. San Diego		8:45 A.M.
Ar. Los Angeles	5:00 P.M.	7:30 A.M.
Ar. San Francisco	8:10 A.M.	7:00 P.M.

Eastbound

	Sunset Limited	Argonaut
Lv. San Francisco	6:45 P.M.	8:00 A.M.
Lv. Los Angeles	9:10 A.M.	8:00 P.M.
Lv. San Diego		6:45 P.M.
Lv. El Paso (M.T.)	8:35 A.M.	8:15 P.M.
Ar. San Antonio	2:50 A.M.	3:20 P.M.
Ar. Houston	8:30 A.M.	9:10 P.M.
Ar. Beaumont	10:46 A.M.	11:40 P.M.
Ar. Lake Charles	12:15 P.M.	1:12 A.M.
Ar. New Orleans	6:00 P.M.	7:35 A.M.

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in the sand, which was logged at 2693-2708 feet.

Peters area is attracting considerable interest. Mills Bennett Production Company's W. R. Peters 3, Section 178, one location south of the first oil producer, has completed at 2595-2615 feet flowing 395 barrels of pipe line oil per day through 3/8-inch choke and showing tubing pressure of 340 pounds and casing pressure of 700 pounds. Rig is being moved back to Peters 2, the first oil producer to plug back and cut off water intrusion. It is bottomed at 2633 feet.

Navarro Oil Company's W. R. Peters 1, Section 39, plugged back to the Cole sand after getting salt water in the Mirando sand at 2741 feet. It is perforating at 1780-90 to complete as gasser.

Humble Oil & Refining Company extended the Rhodes field, McMullen County, two miles northeast when D. W. Rhodes showed 475 pounds gas pressure in 10 minutes on a drill stem test of the Cole sand at 1731-36 feet. It was coring ahead at 2146 feet later in the week.

NEW PETTUS FIELD

Beeville. — Zeni Oil Company's M. Lutenbacher 3, Goliad County wildcat, was completing in the Pettus sand, indicating a new field for the Pettus district. It is located in block 25, Goliad Townsite, and is two miles south of Goliad.

The well is bottomed at 5369 feet with 7-inch casing set at 5352 feet with 560 sacks of cement. Elevation is 195 feet derrick floor.

Plugs were drilled and an attempt made to core ahead. When the core barrel was being taken from the hole, the well blew out and ran wild, blowing mud, gas and oil nearly 100 feet over the top of the derrick. The mud pumps were started and the blow out preventer closed, finally killing the well. Late July 10, efforts were being made to complete. It is showing for a high pressure gas well spraying considerable high gravity oil.

Dirks Brothers' M. M. Bergel 1, E. C. White survey, one half-mile southwest of the Voss field discovery well in Bee County, has been abandoned as a failure at 4306 feet after showing salt water in both the Pettus and Yegua sands. The Pettus was topped at 4052 feet, elevation 404 feet, derrick floor. This is the second test for this field.

H. A. Pressy's R. T. Hicks 1, J. M. Uranga Grant, Bee County, near Normanna, drilled to 3568 feet, set casing on bottom and perforated at 3482-87 feet to open a new field for the Pettus district. It is being completed as a gasser in the Hockleyensis sand.

ZAVALLA FAILURE

San Antonio.—Disappointing results were obtained in tests in the Austin chalk in Bay Oil Corporation's National Bank of Commerce 1, deep Zavalla County wildcat, and the well has been shut down for orders. Late in the week, however, it was reported that a deal was pending whereby the well would be deepened into the Edwards lime, the purpose being mainly for geological information. The well is considered to be too low to offer a chance for production in the Edwards lime.

The well, located 12 miles southwest of the Pearsall field, drilled to 6585 feet, five feet in the Buda lime, plugged back to 6250 feet and tested showings in the Austin chalk at 5806-48 feet, 5923-43 feet and 6145-6200 feet. The result after shooting and acidizing was not more than 2 barrels per hour.

Over in the Pearsall field, Frio County, Amerada Petroleum Corporation has one well near the top of the chalk and two more expected to reach the producing formation during the next week. Termo Company of Texas' J. L. Arp 1, nearly a mile west of the field, was shooting at 5870 feet to complete in the chalk. It promises an extension to the field.

VOSS HEARING

Austin.—A request that the Voss well near the Ray Field in Bee County be treated as a separate oil field was made before the Texas Railroad Commission in a hearing last week.

R. D. Parker, consulting petroleum engineer, stated that gas-oil ratios varied widely between the two areas, that there was a difference in the gravity of the oil produced and a 20 foot difference in the water table between wells in the Ray field and the new Voss well.

He said that operators in the new area were willing to accept all rules applicable to the Ray field with the exception of that providing for 150 feet of surface casing. Conditions in the Voss area require at least 300 feet of surface casing. The rules accepted include a 10-acre spacing rule which is now in effect at Ray.

PUBLIC AUCTION SALE

UNIVERSITY OF TEXAS

Oil and Gas Leases

JULY 20, 1936

For Details of Sale See Page 140

DICKINSON SURVEY

Austin.—A request for a gas-oil ratio survey of wells in the Dickinson field was made at a hearing before the Texas Railroad Commission last week.

Engineers of Humble Oil & Refining Company said that experience had shown that gas-oil ratios rose unreasonably after wells had produced for some six months. Although the ratios were below 2000/1 when the wells were completed, they gradually increased to 20,000/1 in the six months period.

Tests made at various rates of flow failed to disclose any other rate within Commission allowables that would bring these ratios down to a reasonable figure.

For that reason, the operators asked that the Commission's engineers observe further tests and make some recommendation.

At the same hearing, the Humble, Stanolind and Texas companies asked that the commission provide a 20-acre spacing rule for the field.

SOUTH TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BASTROP COUNTY—		
J. E. Mills, C. W. Randle 1, 200 ft wl, 600 ft sl of 100-ac tr in B. Brymer sur	*	2440
Nelson Puett et al, Carroll Est 3-B, Andrew Mays sur (Carroll)	20	2223
BEE COUNTY—		
Dirks Bros, M. M. Bergel 1, 330 ft nl & el of s 46 ac of 386 ac of E. C. White sur	*	4306
O. M. Owensby et al, Minna Coreth 1, 460 ft sl, 1200 ft wl of tr in Adam Stafford sur No. 49	*	1091
CALDWELL COUNTY—		
Burwyn Oil Corp., J. W. Miears 1, W. C. Swearingen sur (Dale)	*	2380
Jennings & Whittington, J. F. McMahan 1, 250 ft sel, & swl of 69-ac tr, James Pinchback sur	*	2324
Ogden & Reed, R. B. Vickery 5, Squire Damon sur (Dale), perf 1920-45 & 2050-73	90	2081
Humble O & R Co & Plymouth Oil Co., E. H. Welder 2, 466 ft sl & el of 2476-ac lse, Jose Maria Rios sur	500	5473
DUVAL COUNTY—		
Mills Bennett Prod. Co., W. R. Peters 3, sec 178 (Peters)	395	2615
Bridwell Oil Co., Wm. Hubberd 10C, sec 75 (Loma Novia)	250	2557
Wm. Hubberd 2D, sec 73 (Loma Novia)	255	2742
Darby Pet. Corp., J. H. Welder heirs 3-A, sec 102 (Seven Sisters)	*	2672
Rodney Delange, Bishop Cattle Co. 11, sec 76 (Loma Novia)	240	2764
Duval Oil Corp., W. K. Hoffman 5, sec 118 (Hoffman)	520	2861
Highland Oil Co., Wm. Hubberd 16, sec 75 (Loma Novia)	115	2575
Humble O & R Co., Ruiz Estate 14, sec 553 (Loma Novia)	460	2757
R. Serna, Jr. 11B, sec 384 (Seven Sisters)	¶15	2192
T. D. Smith 16, sec 382 (Seven Sisters)	1260	2454
Magnolia, C. W. Hahl 43, sec 67 (Loma Novia)	75	2710
Parr Oil Co., J. F. Welder heirs 1-A, 990 ft nl & wl of 200-ac lse, sur 102, 1 mi sw Seven Sisters	*	2747
Rogers & Rogers, Sophie Hoffman 3, sec 118 (Hoffman)	450	2912
Morris Stein, C. W. Hahl 1, sec 47 (Gov't Wells)	*	lcn.
FRIO COUNTY—		
Thornton Davis et al, Halff & Oppenheimer 1, 1350 ft wl, 330 ft sl of John D. Clare sur 336	*	5433
GOLIAD COUNTY—		
H. H. Weinert, Runge State Bank 2, G. B. Meyers sur 26	250	3711
JIM HOGG COUNTY—		
Magnolia Pet. Co., Magnolia-Holbein 1, 5612 ft sl, 514 ft el sur 36, Agua Nueva de Arriba gr	*	4400

Company, Well and Location	Init. Prod. Bbls.	Depth
JIM WELLS COUNTY—		
E. M. Jones, R. Adams 1, 466 ft out of sw/cor of blk 47, Waldron Oil and Gas subd of Robert Adams ranch	*	6535
La Jita Corp., W. E. Pope 1, 330 ft out of sw/cor sw¼ sec 20	295	5351
Stanolind O & G Co., J. E. Sain 1, sec 18, King Ranch subd (Bentonville), perf in 4000-ft sand	¶15	5850
LAVACA COUNTY—		
Cole Pet. Co. & Rhea Nixon, F. A. Kurz 1, 930 ft nl, 330 ft wl of 75-ac tr, E. Goodman sur	*	2505
McMULLEN COUNTY—		
Dan Culver & G. C. Richardson, Wm. Fehler 1, 800 ft el, 500 ft sl of Fehler tr, G. Pittuck sur	6	780
L. D. Ormsby, Griffith 8, 150 ft s No. 5, B. Sparks sur	*	944
NUECES COUNTY—		
Conroe Dr. Co., Rand Morgan 1-B, B. S. & F. sur 403 (Saxet)	*	6518
Lonnie Glasscock, Glover Johns 1, W. S. McGregor sur 582 (Saxet)	550	5817
Gilcrease Oil Co., Hattie Sullivan 1, T. Gallagher sur (Saxet)	575	4448
Tom Graham, Haug et al, Ellendale Gardens (Saxet Heights)	250	4086
W. H. Harrison, Bagnall 1, center 2 ac tr, Villareal gr (Saxet Heights)	480	4075
Starr 1, Villareal gr	480	4075
A. F. Holliday et al, Hutchins-Stillwell 3, sec 30, C. E. I. P. & M. sur Sheppard Farm Lots (Saxet)	400	5810
M. F. Hurlburt, J. O. Phillips 1, center lot 9, 20-ac tr, sec 48 of Flour Bluff Encinal Garden tracts, opens new field (Flour Bluff) perf 6633-43 & 6647-57	1050	7503
Phillips Pet. Corp., Rand Morgan 2, B. S. & F. sur 405 (Saxet) owdd, otd 5512, perf 5819-29	500	5826
Katherine Hutchins 3, blk 19, H. B. Sheppard Farm lts (Saxet)	495	5826
REFUGIO COUNTY—		
W. F. Stone, C. P. Fox 1, blk 1, sec 5, Refugio Town tr sur	*	5002
SAN PATRICIO COUNTY—		
Plymouth Oil Co., E. H. Welder 50C, sec 50, Welder Ranch subd (Plymouth)	750	5881
E. H. Welder 51C, sec 49, Welder Ranch subd (Plymouth)	700	5491
Shell Pet. Corp., G. W. Pullin 2, blk 4, second add of Taft Farm Lands (Taft)	1100	3990
STARR COUNTY—		
Fech Oil Co., Frank Downo 10, blk 4, sh 77-A, porc 81 (Rio Grande City)	25	1458
Larkins & Warr, Kelsey-Bass 1, lot 8, Coastal subd, porc 87 (Barbacoas)	*	5453
Ed Leach, Wardner Trustee 1, 431 ft sl, 244 ft el of 160-ac tr, Porc 84	*	2149
Moss & Bass, Frank Doyno 1, blk 3, tr 77A porc 81, Camargo Juris (Rio Grande City)	120	1424
VICTORIA COUNTY—		
Barnsdall & Costa, S. E. Wright 3, Brownson sur (Placedo)	250	4774
Eastern Texas Pet., J. Hosek 2, Brownson sur (Placedo)	225	4778
Harrison & Abercrombie, T. O. Sturdevant 4, Brownson sur, ab 382 (Placedo)	1600	4763
E. L. Smith & Owensby, J. J. Malik 1, blk 9, Brownson sur (Placedo)	500	4774
Superior O & G Co., Henderson & Pickering 2Bl blk 92, Brownson sur (Placedo)	225	4785
WEBB COUNTY—		
Mills Bennett, Elia Valadez 8, sec 111 (Lopez)	510	2235
G. G. Mortimer, F. L. Garcia 2, sh 5-A, sec 112 (Lopez)	620	2182
H. M. Reed, S. Benavides 4, blk 364, Hale subd, Arispe gr (Cole	600	2970
Superior Oil Co., W. C. Billings 10, sec 109 (Lopez)	450	2252
The Texas Co. & Ohio Fuel Oil and Supply Co., DCRC 1, 330 ft sl & wl lot 16, league 4, Zapata County school sur, sec 12	*	2105
WILLIAMSON COUNTY—		
Graham et al, V. W. Pfluger 1, 2083.3 ft el, 4350 ft sl of J. Jordan sur	*	1056
W. H. Moody, J. V. Stiles 1, 525 ft nl & el of 230-ac tr in J. Bevil sur	*	735
ZAPATA COUNTY—		
Clover O & G Co., A. P. Haynes 16, blk 7, Haynes subd, Comitas & Villa gr (Comitas)	30	945

*Failures; †Junked; ¶Million cu. ft. gas.

GEOLOGICAL SOCIETY

Houston.—The Houston Geological Society has discontinued its usual weekly luncheons until September 3, in accordance with plans authorized by its executive committee. At recent meetings there had not been any papers on the program, and that fact and the vacation season had considerably reduced attendance. On the above date, the usual meetings with papers will be resumed.

On July 9 the Houston Geological Society presented talking motion pictures by the National Park Service, made under direction of Earl Trager, on various subjects. The showing was at the Houston Public Library. Subjects covered included the geologic work of ice, mountain building, volcanos in action, work of the rivers, work of the atmosphere, and ground waters.

23 COMPLETIONS

Houston.—There were 23 completions in the Texas Gulf Coast during the past week. Of that amount 18 resulted in flowing wells with an aggregate initial production of 7090 barrels. The remaining five completions were failures.

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Surprise Strike

GULF UNEXPECTEDLY HITS NEW SAND AT ORCHARD

WEEKLY STAFF REPORT

Houston.—An unexpected new oil sand was found in Orchard field, Fort Bend County, last week when Gulf Oil Corporation was preparing to core Moore 47, M. Smith Survey, at 1266 feet in the Miocene formation and the well came in making 30.2 gravity oil.

After reaching 1265 feet, the operators were coming out of the hole, and after pulling around 700 feet of casing the well started making gas and oil. Heavy mud was pumped into the hole, but returns were lost and Moore 47 came in flowing at the rate of 900 barrels daily through a 7/16-inch choke. Pressures were 160 pounds. At the end of the week the operators were trying to rotate down and make a screen setting after Moore 47 had sanded up. A production test will be attempted.

Orchard field has been producing from the Upper and Lower Oligocene formation from 2685 to 4150 feet. A little production has been received from the cap rock, and some from the Upper Saline Bayou at 6675 to 6690 feet.

Gulf Oil Corporation's Moore 43, like Moore 47, discovered a new sand in the field in July, 1935. The sand in Moore 43, however, was found at 6650 feet, but the test blew out and caught fire. The well was later killed and drilled to 7282 feet in November, 1935, and was plugged back to 6670 feet and came in making 145 barrels of high gravity distillate daily.

On the east flank of the Hawkinsville dome, Matagorda County, Sun Oil Company's Craig 1 flowed oil for the second time after re-working the hole and perforating casing higher than the first perforations, which were at 5150 to 5175 feet. The first part of last week the crew perforated the second time at 5150 to 5160 feet, and the wildcat came in flowing 30 gravity oil at the rate of 86 barrels daily through a 3/16-inch choke from Miocene formation. Tubing pressure was between 100 and 160 pounds. No casing pressure was reported. The oil showed two percent basic sediment and water.

After letting Craig 1 flow for several days the production dropped to 50 barrels daily and finally quit. It was believed that the well sanded up. At the end of the week the operators were contemplating setting screen to make another production test.

Sun Oil Company has encountered considerable trouble getting Craig 1 to flow pipe line oil. The 9⅝-inch casing was perforated with 40 shots from 5150 to 5175 feet the middle of June and the test flowed at the rate of 16 barrels per hour for 20 hours and then sanded up. After pulling the drill stem, the crew found 23 stands of salt water. Cement was pumped into the hole to shut off the salt water. When cement had hardened, the swab was run. Over 1500 feet of pipe line oil was recovered each time the swab was run, but the well would not flow naturally.

Sun Oil Company's Hughes 2, 933 feet northeast of Hughes 1 at Green's Lake, Galveston County, cored salt water sand from 3699 to 3714 feet and was preparing to take another core at the end of the week. Hughes 1 flowed oil, but later trouble was encountered with salt water and the well was abandoned. Much interest was centered around Hughes 2, as it was thought the well would definitely establish a new field for Galveston County after Hughes 1 had shown oil in commercial quantities. Hughes 1 tapped a new sand at 3620 feet, which was thought to be in the Plio-Miocene formation, and flowed 250 barrels of 26 gravity oil.

Shell Petroleum Corporation's Maco Stewart 1 on the Hitchcock prospect, J. Spillman Survey, Galveston County, made a drill stem test at the close of the week from 6082 to 6099 feet which showed 1000 feet of salt water. The operators are reported to have had a slight showing of oil around 6099 feet.

The northern part of Anahuac field, Chambers County, was extended one location west last week when Sun Oil Company completed White 19, J. McGehey Survey, at 7110 feet in Frio formation. White 19 on a potential test flowed 26 barrels per hour through a ¼-inch choke with a tubing pressure of 1025 pounds and a casing pressure of 1125 pounds. The oil sand was topped at 7055 feet, but the well failed to encounter the regular gas sand. Seven-inch casing was cemented at 7053 feet.

Another Marginulina producer was completed on the east side of Anahuac last week in Humble Oil & Refining Company's Lord 2, H. & T. C. Survey, Section 50. Lord 2 came in from 6981 feet, flowing 24 barrels per hour through a ¼-inch choke. Sand was cored from 6963 to 6981 feet, and 7-inch casing was cemented at 6940 feet. The crew drilled Lord 2 into salt water sand at 7137 feet and continued in that formation to 7164 feet, calling for plugging back and sidetracking.

The western portion of Anahuac field again proved disappointing to Humble Oil & Refining Company because Tyrell 12, H. & T. C. Survey, Section 52, failed to pick up the regular Frio pay sand and found salt water sand instead. This is the second failure for the company on this side of the field. Tyrell 12 was abandoned at 7175 feet in salt water sand after finding the top of the sand at 7150 feet.

To offset the failure in Tyrell 12, Humble Oil & Refining Company completed Grippon 6, H. & T. C. Survey, Section 51, at 7085 feet for 28 barrels of pipe line oil per hour through a ¼-inch choke. The oil sand was encountered at 7006 feet. Seven-inch casing was set at 7040 feet.

The east side of the Anahuac field has been defined by Humble Oil & Refining Company's Johnson 2, H. & T. C. Survey, Section 49, east offset to Lord 1. It failed to pick up the Marginulina or Frio sands. At the end of the week the operators abandoned the hole in shale at 8000 feet.

Humble Oil & Refining Company announced an interesting wildcat location about 1¼ miles northeast of the Anahuac field. Boyt 1 is 1399 feet west of the east line and 466 feet north of the south line of the H. & T. C. Survey, Section 44, Abstract 519.

Van Vleck field, Matagorda County, was extended 1750 feet southeast last week when Skelly Oil Company's Langham 1, M. Cummings Survey, came in flowing oil, mud and washwater into the burning pits from 8248 feet. It is the second well to produce from the deep sand which is found at Van Vleck.

Langham 1 was drilled to 8248 feet. Five-inch liner was perforated from 8243 to 8248 feet. The well came in

TEXAS GULF COAST Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANAHUAC—		
Humble, Grippon 6	672	7085
Lord 2	600	7164
Tyrell 12	*	7175
Sun, White 19	624	7110
BIG CREEK—		
Gulf, Davis 69	300	4080
CLAY CREEK—		
Sun, Carway 7	100	1773
ESPERSON—		
General Crude, Esperson 26	99	4147
HIGH ISLAND—		
Stanolind, Smith B-18	100	5024
HUMBLE—		
Texas Co., Landslide 272	190	3160
LIVINGSTON—		
Humble, Grandbury Smith 28	360	4325
PICKETT RIDGE—		
Harry Edwards, Farmer 1	600	4701
Texas Co., Pierce Estate A-23	456	4709
Pierce Estate A-24	288	4713
PIERCE JUNCTION—		
Gulf, Manchester 4	230	4619
RACCOON BEND—		
Humble, Machemehl 5-X	360	4120
SOUTH HOUSTON—		
Dick Schwab, Williams 1	305	4792
Stanolind, Howard 1	433	4775
Schwarz 2	485	4775
TOMBALL—		
Humble, Brautigan 1	*	5633
VAN VLECK—		
Skelly, Cobb B-7	888	7495
BRAZORIA COUNTY—		
Texas Co., Freeport Sulphur Co. 3, Bryan Mound prospect, C. Arriola sur	*	6047
HARRIS COUNTY—		
Circle W. Oil Co., Houston Realty Sales Co. 1, Battleground prospect, H. Carpenter sur	*	6027
WHARTON COUNTY—		
Smith & McDannald, W. Presmeyer 1, Lake View prospect, H&TC sur 10	*	6624

*Failures; †Junked; ¶Million cu. ft. gas.

flowing oil through a ¼-inch choke. The pressure was 325 pounds.

The field was also extended 900 feet northwest last week when Skelly Oil Company finaled Cobb B-7 at 7495 feet. Cobb B-7 came in flowing pipe line oil at the rate of 37 barrels per hour through a ¼-inch choke. Tubing pressure was 1300 pounds; casing pressure was 1200 pounds. Oil sand was encountered at 7469 feet and 7-inch casing was cemented at 7495 feet.

At the end of the week Skelly Oil Company had cored oil sand in Moore 1. The crew carried the test down to 7495 feet in oil sand after topping the formation at 7463 feet.

On the Labelle prospect in Jefferson County, Sun Oil Company's Hebert Broussard 1, J. Blackmon Survey, was fishing for a drill stem at the end of the week at 9843 feet in sand showing gas. The crew drilled into a sand at 9825 feet and the wildcat tried to blow out, after which a heavy special drilling mud was pumped into the hole.

Amelia field, Jefferson County, was extended southwest last week when Humble Oil & Refining Company completed Pinchback 2, C. Williams Survey, for 18 barrels per hour from the Frio formation at 6778 feet. The well came in flowing pipe line oil through a ¼-inch choke, with a tubing pressure of 1450 pounds and a casing pressure of 1900 pounds.

Shell Petroleum Corporation's Carpenter 1, on the Nome prospect, M. Pevito Survey, Jefferson County, drilled to 6887 feet in the Frio formation and found this section barren. The hole was plugged back to 6000 feet and another test will be made of sands from 6005 to 6023 feet which showed 33 stands of pipe line oil on a drill stem test the middle of last month. The wildcat has already indicated it might open a new Gulf Coast oil field.

Strake Petroleum Corporation's Poole 1, Poole Ranch prospect, W. Eggers Survey, Brazoria County, blew gas, mud and hot salt water last week from 7506 feet. At the end of the week the crew was preparing to core. Considerable difficulty was experienced in handling Poole 1 when it blew out because of the hot salt water which tested around 160 degrees F. Strake Petroleum Corporation recently finished a fishing job at 6732 feet and set 9⅝-inch casing at that depth.

The third failure of The Texas Company at Bryan Mound, Brazoria County, was marked up last week when the operators abandoned Freeport Sulphur Company 3 at 6047 feet. The crew topped salt at 5555 feet.

After abandoning Freeport Sulphur Company 3, The Texas Company made location for Robbins 1, 660 feet northeast of the abandoned hole. This places it in a 160-acre tract which is part of a 530-acre lease in the J. W. Brougham Survey. The wildcat is approximately 2½ miles south of Freeport.

South Houston field, Harris County, was extended northwest last week when Dick Schwab's Williams 1, H. & T. B. Survey 6, was completed as a commercial producer at 4792 feet. Williams 1 came in making 306 barrels per day through a ¼-inch choke with a tubing pressure of 350 pounds and a casing pressure of 150 pounds. While drilling Williams 1 to 4792 feet, sand showing oil was encountered at 4670 feet. Five-inch casing was set at 4715 feet.

Stanolind Oil & Gas Company completed Howard 1 at 4775 feet, making 231 barrels in 13 hours through a ¼-inch choke. Tubing pressure was 620 pounds; casing pressure was 700 pounds. Seven-inch casing was cemented at 4588 feet.

The same operator also completed Schwartz 2, South Houston Garden Subdivision 7, at 4775 feet. The well made 485 barrels daily through a ¼-inch choke with a tubing pressure of 670 pounds; casing pressure was 720 pounds.

After discovering a new gas field in Lake View area of Wharton County, Smith & McDannald abandoned W. Presmeyer 1 at 6642 feet, the second test drilled by the operators. Presmeyer 1 is in H. & T. C. Survey, Section 10. The wildcat failed to pick up the gas sand which was found at 3185 to 3199 feet in Mitchell 1. The crew cored below the gas sand level, but failed to find anything of commercial value.

Another failure was marked up for the Battleground prospect last week when Circle W. Oil Company completed Houston Realty Sales Company 1, H. Carpenter Survey, Harris County, as a dry hole at 6027 feet. The well was reported running higher than other dry tests drilled in the area. Houston Realty Sales Company 1 is located 330 feet

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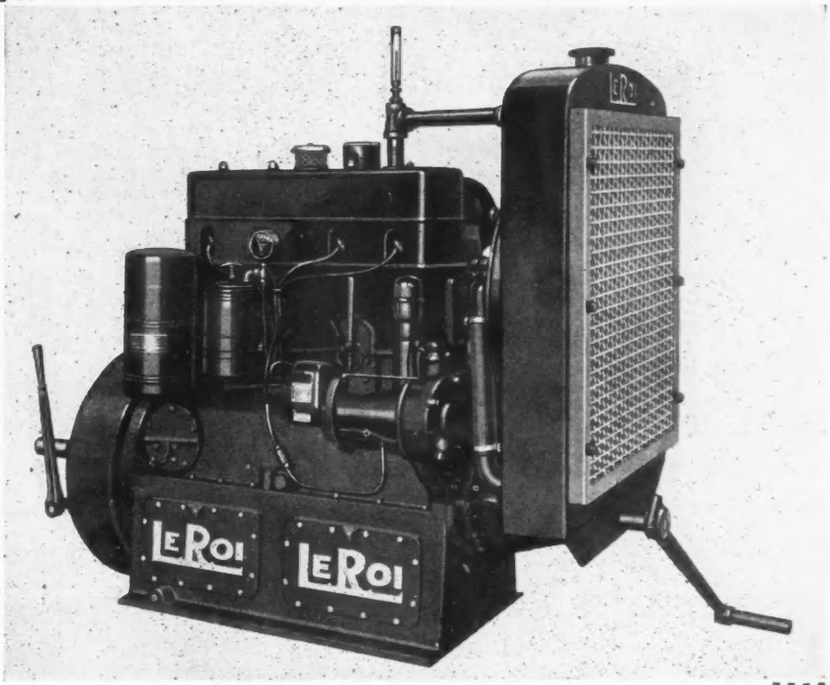

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Fohs Oil Company and Blumenthal have made location for Central Coal & Coke Company 1 in the Dacus area of Montgomery County. The wildcat is 330 feet east of the west line and 2746 feet north of the south line of the J. Stokley Survey.

Lake Charles.—Ten completions reported in Louisiana Gulf Coast last week resulted in eight producers with an aggregate initial production of 7134 barrels daily. The two remaining completions were failures.

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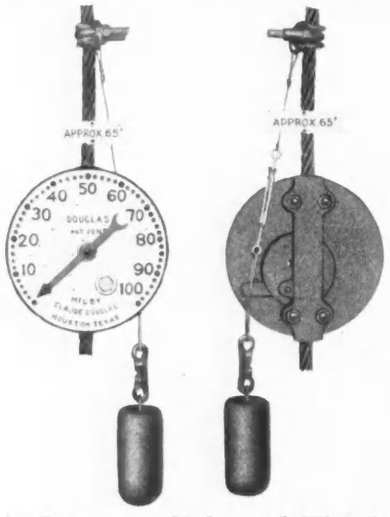

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Lafitte Extended

CONTINENTAL APPROACHING LOUISIANA DEPTH RECORD

Lake Charles.—Lafitte field, Jefferson Parish, was extended around 1200 feet east last week when The Texas Company completed two large producers.

The Texas Company's Rigolets 4, Section 29-17s-24e, was the most recent producer. It came in flowing at the rate of 1750 barrels daily through a three eighths-inch choke from 9406 feet. Tubing pressure was 1350 pounds. After setting 7⅝-inch casing with 1000 sacks of cement at 9360 feet in oil sand which was cored from 9358 to 9400 feet, plugs were drilled and the 38 gravity oil began flowing. Rigolets 4 is a south offset to L. L. E. Lafitte 4, which was also completed last week, and 1065 feet east of Rigolets 3. L. L. E. Lafitte 4, 1168 feet east of L. L. E. Lafitte 3, Section 20-17s-24e, was completed last week flowing at the rate of 1800 barrels of 38.4 gravity oil from 9420 feet. Sand showing oil was cored in the extension test from 9387 to 9399 feet and seven and three eighths-inch casing was cemented with 1000 sacks of cement at 9363 feet. The pipe line oil come in flowing through a three eighths-inch choke with a tubing pressure of 1480 pounds.

Including the above, there have been eight producers completed in Lafitte. The operators have drilled a total of eight wells in an east and west trend to form a double row which is comprised of four wells on Louisiana Land and Exploration leases, each of which is offset to the south by a Texas Company well on the Cooperative Fur Trapping Company acreage. The south boundry of Sections 19 and 20, which is also the north boundry of Sections 29 and 30, constitutes an east and west line running down the middle of the eight well lane.

The two most westerly wells in Lafitte are producing from sands at 9600 feet, indicating the crest of the structure is not only east of the discovery well but east of the two No. 4 wells (one on L. L. E. land and the other on Rigolets Cooperative Fur Trapping acreage) which found production around 9350 feet.

The Texas Company has moved the rig from L. L. E. Lafitte 4 to L. L. E. Lafitte 5, around 2000 feet northeast of L. L. E. Lafitte 3, Section 20-17s-24e. The well was spudded in June 30 and was drilling in shale at 1596 feet at the end of the week. Surface casing will probably be set around 1900 feet. The rig from Rigolets 4 will be moved to Rigolets 5, which is 2000 feet southwest of Rigolets 3, Section 29-17s-24e. L. L. E. Lafitte 5 and Rigolets 5 will be interesting tests to watch and will provide a large extension to Lafitte field if completed as producers.

Continental Nearing Record

Lafitte field is the deepest commercial producing field in the Gulf Coast at present but Continental Oil Company is trying for this honor at Abbeville in Vermilion Parish. The operators were drilling ahead below 10,720 feet on Alvin Hebert 1, Section 20-12s-3e, at the end of the week with 8838 feet of open hole. A string of 13⅜-inch casing was set at 1882 feet. This 10,000-foot hole is probably the straightest deep hole ever drilled. At 10,700 feet the bottom of the hole was only 1½ degrees off vertical. It has never been off vertical more than 1½ degrees. No trouble has been encountered while drilling the deep test. Equipment on the location includes 11,000 feet of four-inch drill pipe, and it is reported that over 11,000 feet of seven-inch casing has been ordered out to the well to make a setting. If the operators make this setting it will be the longest string of seven-inch casing set in the world. Continental Oil Company will have to drill Alvin Hebert 1 only 31 more feet to establish a new Gulf Coast deep drilling record. Shell Petroleum Corporation's Jarnigan 1 at Roanoke in Jefferson Davis Parish was completed as a dry hole at 10,750 feet.

The Louisiana Gulf Coast is an outstanding example of the increasing practice of drilling to 10,000 feet or more. Although it is the last to make its appearance among the states of the nation that have been tested below 10,000-feet, Louisiana Gulf Coast since November 4, 1934, until June 26, 1936, has had six wells to penetrate the horizons below 10,000 feet. The state is taking the lead in the number of 10,000-foot tests drilled. All of Louisiana's deep tests are in the Gulf Coast.

Roanoke Well Due

On the north side of the Roanoke field, Jefferson Parish, Shell Petroleum Corporation was preparing to complete Carter 3, Section 1-9s-4w. The hole was carried down to 8659 feet in oil sand after topping the sand at 8630 feet. At the end of the week the operators were waiting on cement to set. Four drill stem tests were made on the north flank project, only one of which gave the operators a fair indication of what was at 8659 feet. On the fourth test the tool was seated at 8640 and after being open for one minute it slipped. While the testing tool was open

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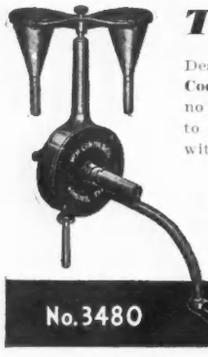

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the operators recovered seven barrels of oil and three quarters of a barrel of mud.

Continental Oil Company completed Fruge 1 on the southeast side of Tepetate field, Acadia Parish, last week. Fruge 1 made 406 barrels in 19 hours through a three sixteenths-inch choke with a tubing pressure of 1100 pounds and a casing pressure of 1200 pounds. Hole was drilled to 8318 feet, after topping the oil sand at 8310 feet. Five and three quarter-inch casing was cemented at bottom.

On the northeast side of the field, Continental Oil Company was preparing to complete Welsh 3-A, Section 28-7s-2w at 8301 feet. The crew was running an electrical logging device prior to setting 5¾-inch casing at the bottom.

The company has made a location for Chas. Houssiere 1. It is in the center of the east 17.5 acres of a 35-acre tract, occupying a position of the NE¼ of Section 33 and NW¼ of Section 34-7s-2w.

East of the discovery gas well at Bayou Mallet field, Acadia Parish, Superior Oil Producing Company's H. Goss 1, Section 13-7s-1e, was drilling in sand and rock at 7395 feet at the end of the week after failing to pick up the sand found in Adams Smith 1. The well is in search of deeper producing horizons.

Fohs Oil Company's H. Powers 1, southwest of production at English Bayou, Section 14-9s-8w, Calcasieu Parish, cemented seven-inch casing at 7061 feet in oil sand. The hole was drilled to 7063 feet. After the cement is hardened, casing will be perforated. If the well proves a commercial producer, it will extend the field southwest.

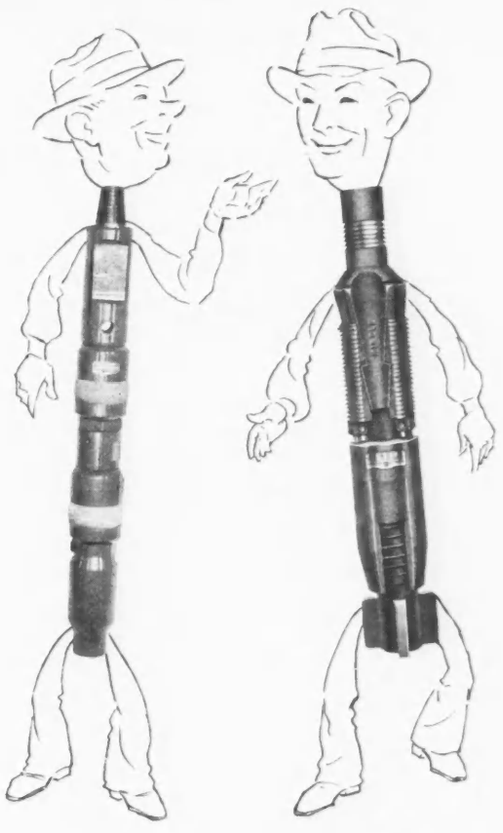
Strake Petroleum Corporation's Miller Estate 1 on the Woodlawn prospect, Section 7-9s-5w, Jefferson Davis Parish, was coring ahead in salt water sand at 7878 feet after coring sand which showed salt water from 7864 to 7877 feet.

The north and northwest sides of the New Iberia field, Iberia Parish, were receiving the attention of operators in the area. Harry Foditaes' Gulf Land Fee 2, 400 feet southwest of No. 1, Section 25-12s-7e, was being washed in at the end of the week. Sand showing oil was encountered at 4663 feet, and the crew stopped at 4685 feet. An electrical logging device showed good resistivity and porosity.

SOUTH LOUISIANA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CAILLOU ISLAND—		
The Texas Co., State Caillou Island 36	1772	4214
State Caillou Island 42	1134	4122
CAMERON MEADOWS—		
Burton Sutton Oil Co., School Land 3-A	100	4060
School Land 13	10	4614
JENNINGS—		
John I. Getty, Jennings Oil Co. 1	40	2375
LAFITTE—		
Texas Co., L. L. E. Lafitte 4	1800	9420
Rigolets 4	1750	9406
TEPETATE—		
Continental, Fruge 1-A	528	8318
ACADIA PARISH—		
Magnolia, Homeseekers 1, Esterwood prospect, sec 54-10s-1w	*	9456
CALCASIEU PARISH—		
Pritchard & Lambert, Landry 1, Dutch Cove prospect, sec 23-11s-10w	*	590

*Failures; †Junked; ¶Million cu. ft. gas.



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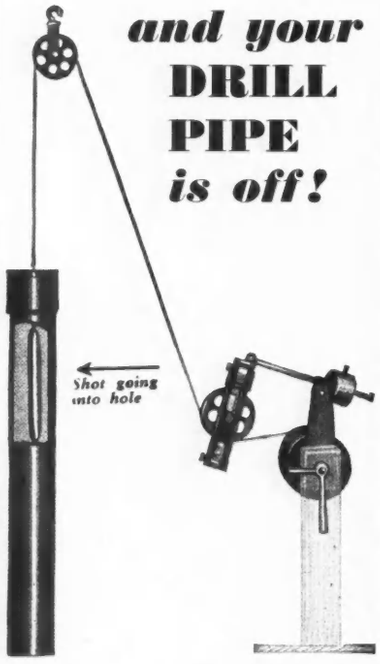

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GOOSE CREEK, TEXAS, U.S.A.

M. C. WOMACK (Phone 89) Thibodeaux, La.

Shreveport, La.—The northeast and southwest ends of Rodessa field divided interest last week with new producers completed in each. One-half mile north of the recently completed four-mile southwest extension well of American Liberty Oil Company, Rambo 1, J. H. Rives Survey, Superior Oil Company's Stallcup 1 (Chew), Robert Trammel Survey, was completed flowing 16 barrels of oil per hour from 6050 feet, production coming through 3/16-inch tubing choke with a tubing pressure of 100 pounds and a casing pressure of 600 pounds. Elevation is 277 feet. It is making 0.4 percent basic sediment and water. This was the first well completed in that extension after the Rambo opened up this large potentially productive territory.

On the northeast edge of the field, American Liberty Oil Company's Norton Estate 1, NE NE 17-23n-15w, was completed at 6033 feet flowing 60 barrels of oil per hour through ½-inch tubing choke, entirely free of water. Both tubing and casing pressures were 550 pounds. This has strengthened faith in a part of the field where comparatively small wells had heretofore been completed and where a northeast outpost well in Section 9-23n-15w had been a gas-distillate producer. Several additional wells will be drilled immediately in that vicinity due to the volume of the new producer.

Canadian Oil Company's Comegys 1, SE SE 10-23n-16w, on the north edge of production, was completed at 6020 feet flowing 11 barrels per hour through ½-inch tubing choke, with a tubing pressure of 20 pounds and a casing pressure of 250 pounds.

A southeast edge well in the oil area was completed by Regent Oil Company in Tyson 1, Section 24-23n-16w, completed at 6005 feet flowing 6 barrels of distillate per hour and making 4,000,000 cubic feet of gas daily.

Other Completions

Other Rodessa completions last week were: R. W. Norton's Spearman 2, Section 17-23n-15w, completed at 6026 feet, flowing 20 barrels per hour through 3/16-inch tubing choke with a tubing pressure of 350 pounds and a casing pressure of 1050 pounds; United Gas Public Service Company's Brewer 6, completed at 5995 feet, flowing 30 barrels per hour through ¼-inch tubing choke, with a tubing pressure of 700 pounds and a casing pressure of 450 pounds; United Gas Public Service Company's Simpson 2, James Young Survey, Cass County, Texas, completed at 6049 feet, flowing 21 barrels per hour through ¼-inch tubing choke with a tubing pressure of 375 pounds and a casing pressure of 300 pounds; Tri-State Oil & Gas Company's Hall 1, Section 23-23n-16w, completed at 6004 feet, flowing 8 barrels of oil per hour through ⅛-inch tubing choke with tubing pressure 1200 pounds and casing pressure 1500 pounds. The well is also making 2,000,000 cubic feet of gas daily. It was completed after acid was used.

Another well completed in the J. H. Rives Survey, Cass County, a direct offset to American-Liberty Oil Company's Rambo 1, was United Gas Public Service Company's Tyson A-1, J. H. Rives Survey, completed at 6065 feet, flowing 16 barrels per hour through 14/64-inch tubing choke. Seven-inch casing was cemented at 6016 feet. On the Louisiana side of the field, United completed U. S. Government 2, Section 29-23n-16w, near the Texas line, flowing 32 barrels per hour through ½-inch tubing choke with tubing pressure 600 pounds and casing pressure 300 pounds. It also completed Harris 3, Section 15-23n-16w, flowing 30 barrels per hour through ½-inch tubing choke with tubing pressure 350 pounds. Phillips Petroleum Company in the northeast part of the field completed Norton Estate 5, Section 17-23n-15w, which flowed 44 barrels in 15 hours through ¼-inch tubing choke, with tubing pressure 350 pounds and casing pressure 300 pounds. Total depth is 6070 feet.

Arkansas - Louisiana Gas Company completed Rodessa 18 after using 1000 gallons of acid, flowing 40 barrels per hour through half-inch tubing choke with tubing pressure 660 pounds and casing pressure 180 pounds.

Travis Peak Gas

The first commercial production in the Travis Peak (Lower Trinity) in North Louisiana or Arkansas was obtained last week when Lide & Greer's Simmie Gardner 1, SW NW NE 10-17n-4w, Lincoln Parish, Simsboro district, was completed at 6575 feet, making 67,634,000 cubic feet of wet gas and a spray of distillate; rock pressure was 2900 pounds. With elevation of 268 feet, this test logged top of chalk at 2180 feet and its base at 2655 feet. Seven-inch casing was cemented at 6451 feet, with 16-inch set at 241 feet, and 10¾-inch at 2386 feet. The well had shown 10,000,000 feet of wet gas in a drill stem test at 6483-98 feet.

This well is ⅝ mile north of the same operators' Fowler 1 in the same section, completed several months ago in the Glen Rose oolitic lime below the anhydrite at 5300 feet as a large wet gasser to open Simsboro as a new field. No other wells have been drilled in this district. Lide & Greer, before the first well was completed, had sold the gas rights on their block to Arkansas-Louisiana Gas Company, retaining the oil rights, and their new well had been in search of oil.

D. A. DENNISON, former associate editor of the Oil and Gas Journal, Tulsa, who retired in September of 1935, died at an Olean, New York hospital. Dennison was eighty years of age, and had been active in oil and gas writing most of his life.

STILL LEASING

Shreveport.—Leasing activities in the North Louisiana Basin continues at a comparatively high pitch although most of the geophysical activity in North Louisiana and Arkansas is confined to Permian lime possibilities in Northeast Louisiana and South Arkansas.

In Bienville Parish, in the North Louisiana Basin, The Texas Company is taking a few leases in townships 14 and 15 north, range 7 west. Gulf Oil Corporation is leasing in township 14, range 7, and in township 18, ranges 6 and 7 west. M. V. Boles of Houston, has taken over 2500 acres in township 16 north, range 9 west, Bienville Parish, from G. F. Miller and is reported planning a 4500-foot test to start by September 1.

Bossier Parish has more geophysical activity than any parish on the Sabine Uplift. Arkansas-Louisiana Gas Company has a geophysical crew working in township 20 north, range 13 west, Tidewater Oil Company's geophysical crew is working in township 17 north, range 11 west, Sligo district, this company having obtained a half interest in 1200 acres and its drilling test, Skannal 1, Section 22-17n-12w, on the southwest flank of the Sligo field from Producers Oil & Gas Company (W. E. Hall et al). Amerada Petroleum Corporation which has completed detail work in township 22 north, range 11 west, has a geophysical party in township 22 north, range 13 west. United Gas Public Service Company's geophysical party has just concluded work in township 18 north, ranges 11 and 12 west.

In northeast Louisiana, Gulf Oil Corporation has taken a block of leases in township 14 north, range 2 east. In Claiborne Parish, E. R. Brann is assembling a block in township 20 north, range 8 west. Burks White has taken some of the acreage held by Ryan Petroleum Company in township 20 north, range 7 west of the same parish. H. L. Hunt has also taken some leases in township 20 north, range 8 west.

George B. Conover is reported to have assembled a 20,000-acre block in townships 7 and 8 north, ranges 3 and 4 east, Concordia Parish, for a test. On the Sabine Uplift in DeSoto Parish, bordering the Texas line, Amerada Petroleum Corporation is reported to have taken several leases in township 11 north, range 16 west.

Another northeast Louisiana parish getting early geophysical activity is Franklin Parish where Gulf Oil Corporation is reported to have taken a geophysical option on acreage in township 15 north, range 7 east. The Texas Company is leasing in Morehouse Parish in township 22 north, range 7 east, in the Permian lime trend. Gulf Oil Corporation is reported to be planning an early test for oil in Section 32-17n-6e, Richland Parish, in the old Richland gas field which this company discovered in November, 1926, and later sold its gas rights to United Gas Public Service Company, retaining its oil rights.

By its recent acquisition of an eight-months geophysical option on Bonita Lumber Company and other acreage in Morehouse Parish, Tidewater Oil Company is reported to have almost 50,000 acres available for such exploration with option to take 5000 acres for a deep test. In Tensas Parish, United Gas Public Service Company recently took 2000 acres in township 11 north, range 9 east.

In Union Parish, which borders the Arkansas line, Lyons and Neely have assembled a 10,000-acre block in townships 21 and 22 north, range 2 west. In the same parish, R. W. Rhodes is reported to have let his geophysical options expire on a large block in township 23 north, range 2 west. In West Carroll Parish, another northeast Louisiana Parish, The Singer Corporation has approximately 11,000 acres having recently added 2500 acres in townships 19 and 20 north, range 9 east.

Phillips Petroleum Company is reported to have assigned to W. D. Ambrose two close-in 40-acre tracts to J. P. Evans' Crichton 1, Section 35-18n-9w, Webster Parish, recently completed at 5589 feet as a large gas-distillate well in what corresponds to the Gloyd sand at Rodessa. A test will start within 30 days. Considerable protection acreage is being secured in the old Shongaloo gas field of Webster Parish, which is in township 23 north, range 9 west, where geophysical work has been done recently. United Gas Public Service Company recently acquired 80 acres in Section 21-23n-9w.

In East Texas

Considerable geophysical activity is still under way in the East Texas counties bordering the Louisiana line. In Cass

NORTH LOUISIANA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO PARISH—(Rodessa)—		
American-Liberty Oil Co., Norton Est. 1, 17-23n-15w	3000	6033
Canadian Oil Co., Comegys 1, 10-23n-16w	1000	6020
R. W. Norton (Magnolia), Spearman 2, 17-23n-15w	2000	6026
Phillips Pet. Co., Norton Est. 5, 17-23n-15w	1000	6070
Tri-State O & G Co., Hall 1, 23-23n-16w	1000	6004
United, Brewer 6, 22-23n-16w	3000	5995
U. S. Government 2, 29-23n-16w	2000	6020
Harris 3, 15-23n-16w	2000	5995
CASS COUNTY (Texas)—		
Superior Oil Co., Stallcup 1 (Chew), R. Trammell sur	1200	6050
United Gas, Simpson 2, Jas. Young sur	2500	6049
Tyson A-1, J. H. Rives sur	2000	6065
BOSSIER PARISH—		
Bossier O&G Co., B. A. Sherrell 3, 13-19n-12w	†	2226
CALDWELL PARISH—		
G. W. Zeigen et al, La. Cent. Lbr. Co. 6, 18-14n-3e	*	1789
DE SOTO PARISH (Pleasant Hill)—		
E. A. Stiller, Jenkins Est. 1, 35-13n-12w	15	2490
GRANT PARISH—		
Tri-State Dev. Co., Ethridge 1, 19-7n-3w	*	3012
MOREHOUSE PARISH (Monroe)—		
United Gas Pub. Serv. Co., Tensas-Delta Lbr. Co. 25, 29-22n-4e	¶3½	2169
SABINE PARISH (Converse)—		
Circle W Oil Co., Magness 1, 30-9n-13w	40	2110

*Failures; †Junked; ¶Million cu. ft. gas.

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County, Shell Petroleum Corporation has a shooting crew in the northwest part of the county. In Harrison County, Sinclair-Prairie is running a profile from the W. H. Payne Survey to the city of Marshall. In Marion County, west of Jefferson, Amerada Petroleum Corporation's shooting crew is still working around the Miles Reed Survey. Shell Petroleum Corporation still maintains a shooting unit south of Carthage. In Sabine County, Ed Stratton of Pioneer, Texas, is assembling a large block in the southeast part of the county, part of which was held by Carter Oil Company several years ago on which two shallow tests were drilled. In Shelby County, Pure Oil Company is still keeping a seismograph unit around the village of Haslam.

STILL SEARCH

Salt water has not dampened interest

ARKANSAS WEEKLY STAFF REPORT

El Dorado, Ark.—Appearance of salt water in the top of the Permian lime where gas-distillate production was found at Snow Hill in Ouachita County at slightly below 4900 feet, has failed to dampen the extensive geophysical and leasing campaign that resulted from this discovery. This activity continues unabated.

In Ashley County, Phillips Petroleum Company has moved in two geophysical parties, one from Morehouse Parish, Louisiana, which is working in township 19, range 9, and the other moved in from Bradley County is working in 18-9. Both are seismograph crews. After a thorough seismic survey of parts of Columbia and La Fayette Counties, Superior Oil Company is reported to have made tentative location for a deep test in Section 13-18-24. This location was made after a fault extending southwest-northeast is reported to have been mapped.

Continental Oil Company is reported to have taken a geophysical option on approximately 200,000 acres of land in Cleveland, Dallas and Lincoln Counties, north of Fordyce and between this town and Star City. The acreage is approximately in townships 9 and 10 south, ranges 7, 8, 9, 10, 11 and 12 west.

Southwest of the village of Fouke, Miller County, near a fault that is said to be part of a graben in that area, E. B. Guess of Texarkana, has assembled a block of acreage most of which is Miller Land Timber Company fee for a proposed Trinity test. The acreage centers around Section 12-18-29.

Union County is getting its share of geophysical work. Mid-Continent Petroleum Company is reported to have moved a seismograph to El Dorado. Amerada Petroleum Corporation has a geophysical party still in township 16, range 14. Magnolia Petroleum Company is shooting around the shallow Woodley field in township 18, range 14. Lion Oil & Refining Company is reported to have added approximately 1800 acres to a block it has had for some time around township 17, range 13.

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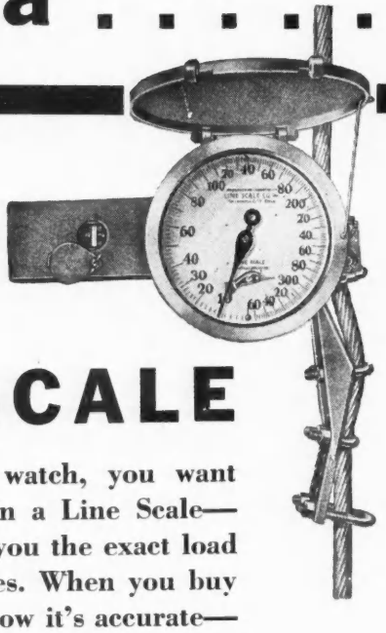

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GULF BUYS GAS

Fuel will be used to operate at Smackover

El Dorado, Ark.—To operate its Smackover field properties, Gulf Oil Corporation plans to buy 3,000,000 cubic feet of gas daily from Standard Oil Company of Louisiana's Reynolds B-3, SE NE 27-15-15, recently completed as the second gas-distillate producer in the top of the Permian lime. Gulf is preparing to connect to the well immediately.

Salt water that appeared in Standard's well had declined to a negligible quantity, the well on a recent gauge having shown through 1-inch tubing choke 5,445,000 cubic feet of gas and 65 barrels of oil daily, with 1 percent

ARKANSAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CLARK COUNTY—		
B. Tribinoff et al, Gibbons 1, 27-8s-18w	*	557
LA FAYETTE COUNTY—		
Earl F. Fox, Coleman 2, 30-16-24	*	3760
UNION COUNTY (Rainbow City)—		
Kinnebrew & Simpson, L. S. Adams 1, 12-17-14	*	3172

*Failures; †Junked; ¶Million cu. ft. gas.

salt water and 4 percent basic sediment. Tubing pressure was 900 pounds, casing pressure 1150 pounds, and pressure on the flow line was 270 pounds.

Phillips Petroleum Company's Reynolds 1, Section 27-15-15, the discovery gas-distillate Permian producer, gauged 9,000,000 cubic feet of gas, 308 barrels of net oil, and 62 barrels of salt water through similar tubing choke with a tubing pressure of 650 pounds and a casing pressure of 970 pounds. Pressure on the flow line was 290 pounds.

Lion Oil & Refining Company's Reynolds-Berg 1, SE NE 28-15-15, which is penetrating the Permian lime in search for production that will be free of water, logged 198 feet of well saturated porous lime having a brackish taste just above 5000 feet.

20 PERMITS

Shreveport.—Twenty drilling permits were issued last week by the minerals division of the State Department of Conservation, of which 13 were for North Louisiana, divided among the following parishes: Bossier 1, Caddo 6, Caldwell 1, Grant 1, Morehouse 3, and Union 1. Those in South Louisiana were divided among the following parishes: Acadia 1, Ascension 1, Iberia 2, Jefferson Davis 1, La Fouche 1.

El Dorado, Ark.—There were no new drilling permits issued last week by the Arkansas Board of Conservation.

PERMIAN PLAY

Arkansas showing May influence Mississippi

SOUTHEASTERN STATES WEEKLY STAFF REPORT

Jackson, Miss.—Fred E. Courson has made tentative location for the first of at least two 3000-foot or deeper tests on large holdings he has in south Mississippi a large amount of which is in Perry County. The tentative location is J. J. Newman Lumber Company 1, Section 26-1n-9w. Sun Oil Company, The Texas Company, Humble Oil & Refining Company, United Gas Company, Magnolia Petroleum Company, Kirby Petroleum Company, R. E. Carter, and others have acreage in his holdings.

Believed to be due to the fact that the Permian lime may have possibilities northwest of the Jackson gas field, which theory has been strengthened by the recent gas-distillate production in Ouachita County, Arkansas, Sun Oil Company is continuing to pay rentals on approximately 25,000 acres of holdings in Hinds and Madison Counties. This acreage has been held since 1928. However, probably an equal amount has been allowed to lapse.

The play for the Permian lime undoubtedly will reach into the delta section of Northwest Mississippi as a sequel to the development in Arkansas.

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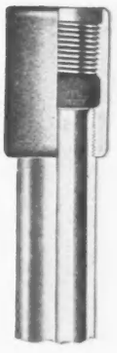

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Lime Pay Strike

WILDCAT THREE MILES EAST OF MONUMENT PRODUCTIVE

WEEKLY STAFF REPORT

Hobbs, N. M.—Producing from lime horizon that correlates with the Hobbs pay, C. & G. Oil Company and The Texas Company's Ellen Weir 1, C NE NE 14-20s-37e, situated about three miles east of the Monument field, has developed commercial production at 4075 feet, or 511 feet sub-sea. The well was swabbing and flowing eight barrels oil per hour late last week after treatment with 2000 gallons of acid below tubing packer set at 4063 feet to exclude a small amount of sulphur water encountered after passing up oil and gas in sandy-lime horizon above 3955 feet. Porous lime formation found at about 500 feet sub-sea level in the Hobbs field is the source of the most consistant and profitable production in the state.

Top of the lower pay was logged at about 4050 feet in Weir 1, and free oil appeared in the hole prior to using acid. Production estimated at 10 barrels oil and 3,000,000 feet of gas daily was developed from the sandy-lime zone. A number of leases in close vicinity of the test were cancelled by expiration of contract within recent weeks.

Strike Called Off

Field work in Lea County resumed its normal status early last week as result of rig builders having called off their strike for higher wages after being idle since June 10. Strikers tied up all new work where derricks are used in connection with rotary and cable tool drilling, and their inactivity deprived a large number of drilling crews of work.

Six locations were authorized the past week. Three locations assigned the Monument field, included Amerada Petroleum Corporation's Chas. Weir 6, C NE NW 35-19s-36e, and State 2-V, C NW NE 36-19s-36e, and The Texas Company's Mattern 3, C SE SW 20-19s-37e. Plains Production Company, Dallas, is starting work on three leases in the sandy-lime belt northeast of Jal that were farmed out by Humble Oil & Refining Company, John Williams 1, C SW NE 34-24s-37e, is a north offset to a recent completion by the Dallas firm. Operations have been started on J. A. E. Knight 1, C NE SE 21-24s-37e, a wildcat, and also on J. A. E. Knight 2, C NE SW 14-24s-37e.

Swabbing equipment was installed the past week at Magnolia Petroleum Company's State-Bridges 1, SW SW NW 13-17s-34e, Lea County wildcat that has been inactive since 1929, after the well failed to maintain its flow. The well was opened June 30 to provide fuel oil to be used by the company in drilling Scharbauer-Eidson 1, C NW NE 29-16s-35e, about eight miles southwest of Lovington, and produced about 1000 barrels of oil before exhausting its flow.

10 Monument Producers

Monument field contributed 10 of the 19 producers recorded by Lea County the past week. Amerada Petroleum Corporation's Sarah Phillips 1, SE SE SW 33-19s-37e, offsetting a small producer in the extreme east portion of the field, flowed 118 barrels per hour natural through one-inch tubing choke from lime at 3910 feet, or 341 feet sub-sea. The caliber of this well will likely stimulate development work in the area. The same company's Weir 5, C SW NW 35-19s-36e, located near the northwest edge of production, gauged 97 barrels hourly through one-inch choke after using 2000 gallons of acid at 3955 feet. The hole is bottomed at 319 feet sub-sea. Continental Oil Company's State 4-C-30, C SW NW 30-19s-37e, an inside property, logged lime pay at 3852-72 feet and at 3875-92 feet, and flowed 144 barrels hourly natural through 5½-inch casing with drill pipe in hole. On completion gauge the well produced 75 barrels per hour through three quarter-inch tubing choke, with gas volume rated at 2,750,000 feet daily.

General Crude Oil Company and Magnolia Petroleum Company's State 2-E, C NE SW 32-21s-36e, located on the south end of the main section of the Eunice lime area, encountered more pay in deepening to 4000 feet, or 385 feet sub-sea, and flowed 30 barrels in six hours. This well failed to make a commercial pumper when drilling halted at 3967 feet for a nitro shot and double treatment of acid.

SUMMER EXPENSES
Gasoline taxes will cost tourists plenty

New York.—The vacationist, setting out with his family this summer for a two-week tour of some of the nation's scenic spots, will take along an uninvited and invisible guest who will cost him the price of a dinner every 200 miles he drives. This guest is the gasoline tax collector.

The average gasoline tax in the United States, including the duplicating federal levy of 1 cent per gallon, now exceeds 5 cents per gallon, and a motorist driving 200 miles per day will pay out about 90 cents in gasoline taxes, assuming that he gets 15 miles to the gallon. Gasoline taxes on the average now increase the cost of gasoline to the motorist by nearly 40 percent.

The number of tourist dollars which find their way into the pockets of the nation's small business men will be reduced by the gasoline tax. In 1933, it is estimated, tourists spent $2,500,000,000. Of this sum $54,700,000 went for gasoline, but taxes raised the total motor fuel cost $24,400,000, or 44.5 percent, however, bringing this item to $79,100,000.

Since the average daily expenditure per motor tourist is estimated at $7, the $24,400,000 of gasoline taxes tourists had to pay in 1933 would have been sufficient to provide approximately 25,000 people with sufficient funds for a two-week vacation trip by car.

Other recipients of tourist money, restaurant and roadstand keepers, places of amusement, confectionery stores, and miscellaneous retail stores, also would benefit from increased business if taxes on gasoline were lower, and the benefit would be particularly large in states where gasoline taxes now amount to over 50 percent of the retail price.

McCAMEY SPACING

Austin.—A hearing to consider spacing rules for the McCamey Field in Upton County has been scheduled for July 21 in Austin according to a notice issued by the Texas Railroad Commission.

The operators have requested the commission to provide a ten acre spacing rule. This would allow wells to be drilled 330 feet from lease or boundary lines and 660 feet apart. At present the statewide rule which applies to that field provides for wells to be drilled 150 feet from lease lines and 300 feet apart.

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Mile Extension

SUNDANCE PRODUCTION AT LANCE CREEK ENLARGED

ROCKY MOUNTAIN FIELDS

WEEKLY STAFF REPORT

Casper, Wyo.—Sundance limit of the Lance Creek field, Niobrara County, eastern Wyoming, was extended one mile to the east last week. Continental Oil Company's Apex 3 Account 2, C SE NW 34-36n-65w, tested 25 barrels in a half hour through the drill stem seated at 4019 feet with only seven feet of fourth Sundance sand drilled to 4026 feet. The company is waiting on cement to set around the 8⅝-inch casing at 4012 feet. The well will be completed at present depth.

The well is on a Buck Creek Oil Company lease. Buck Creek is a subsidiary of Continental Oil Company. The well brings within proved limits approximately 2500 acres, which is controlled by Continental Oil Company and Argo Oil companies.

Ohio Oil Company's Lamb 8-Account 2, C SW NE 5-35n-65w, is a near completion and is flowing at 50 barrels per hour and cleaning itself at late report. The well drilled 98 feet of saturated basal Sundance formation from 3947 feet to 4045 feet. Hole bottoms at 4047 feet in the red beds and the seven-inch production string is set on top of the sand.

Continental Oil Company released one location last week out of five it is reported to have staked in its drilling campaign during the next two months. The first report is Rohlff 7, C NE SW 32-36n-65w, elevation 4381 feet, moving in material.

Continental Oil Company's Schuricht 1-B, C NW SE 6-35n-65w, is a near completion waiting on cement to set around the seven-inch casing at 3869 feet. The well cored saturation in the basal Sundance sands between 3871-91 feet and 3911-44 feet. Depth is 3947 feet in the red beds. Continental's Schuricht 1-A-3, C SW NW 5-35n-65w, is drilling at 2750 feet.

After a light shot in the Sundance sand from 3941-97 feet Argo Oil Company's Elliott 7, C NE SW 5-36n-65w, made a good flow as it cleaned itself. The company is running tubing preparatory to making an official gauge next week. The well pumped at the rate of 240 barrels daily prior to shot. Hole bottoms at 4007 feet.

MacKinnie Oil & Drilling Company Mary Thompson 1, NE SW NE 7-35n-65w, an outside location south of the Sundance production at Lance Creek, is drilling at 2681 feet.

Northern Wyoming

Preparatory work to kill gas flow in Stock Oil Company's Allen 1, SE NW SE 35-56n-97w, in the Garland field, Big Horn County, is almost finished as five of the six old abandoned shallow Frontier wells have been cemented. Operators will then pump water through from Ohio Oil Company's Smith 17 and Stock's Allen 1-X to bridge hole and kill the gas flow. Gas is from the Embar-Tensleep at 3815 feet and total depth is at 3838 feet with 1000 feet of drill stem frozen on bottom.

Stock Oil Company's Allen 1-X, 420 feet due east of Allen 1, is drilling at 2635 feet in the red beds. The Dakota sand was had at 1700-2400 feet and operators will stop and pump through at this horizon when cementing job is finished.

Stock Oil Company's Yates 1, center south line SW NE 33-56n-97w, is drilling at 3306 feet.

Two new wells were spotted in

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northern Wyoming oil fields this week: In the old Kirby Creek field, Hot Springs County, Freudenthal et al's 6, SE SE NE 21-43n-92w, is a new location drilling at 230 feet.

Bruce C. Teeters et al's Government 2, SW SW SW 30-48n-90w, in the Hidden Dome field, Washakie County, is drilling at 1300 feet.

California Exploration Company's Government 2, NW SW NW 7-44n-96w, in the Waugh Dome field, Hot Springs County, has plugged back to 4040 feet from 4242 feet. Operators are preparing to shoot with perforator gun the 6⅝-inch casing to test production in the Embar lime. Saturation was encountered at 3954 feet and the Embar topped at 3890 feet. The well had been drilled to the Tensleep at 4545 feet.

In the Byron field, Big Horn County, Peter Evanoff's McAllister 1, Lot 40, NW NE SE 3-56n-97w, has drilled to 2495 feet and is lowering the 6¼-inch casing to bottom.

Peay Oil Company (Crosby and Huntington) Denio Mining and Milling Company lease 1, C NE NE NE 15-55n-97w, is attempting to repair leaking casing. Total depth is at 3900 feet. Well is on the south fault block of Garland anticline, Big Horn County.

Arlt and Doyle's Government 1, SW SW SE 29-48n-91w, in the Hidden Dome field, Washakie County, is shut down at 984 feet.

Western Wyoming

Nelson et al staked a new location this week in the Pilot Butte field in Fremont County. The well, Enos 1, W Lot 7, 27-3n-1w, is drilling at 625 feet.

Sinclair-Wyoming Oil Company's test in the Muskrat Dome field, Fremont County, Muskrat 2-C, NE SW SW 1-33n-92w, is reaming at 4320 feet.

The Texas Company's 2D 07789A, NWc 10-26n-113w, in the LaBarge field, Lincoln County, is drilling the hard white lime shell at 804 feet.

Mountain Fuel Supply Company's W. T. Nightengale 1, SW NE NW 32-16n-104w, a quarter of a mile southwest of the nearest well in the South Baxter Basin gas field Sweetwater County, is drilling at 1340 feet.

Southeastern Wyoming

The California Company last week started deepening operations in Holst 1, NE SE SE 13-17n-77w, which was the discovery well of the Muddy and Dakota sands in the Quealy Dome field, Albany County, southeastern Wyoming. Operators will deepen this test from the Dakota sand at 3231-3256 feet to the Sundance formation. Holst 1 made 60 barrels initial of oil in the Muddy sand in December, 1934, at 3146-3175 feet. The well was completed in the Dakota sand in May, 1935, for 600 barrels oil daily on a 10-day test at 3231-3256 feet.

In the Dutton Creek field, Carbon County, south central Wyoming, Sidney H. Keoughan and Union Oil Company's Union Pacific 20-X, 1800 feet from the east and 1320 feet from the south lines of 1-18n-78w, deep test to undrilled lower formation underlying the field, is coring at 5276 feet in the Morrison formation and feeling ahead for the major objective, the Sundance formation.

Montana Fields

Development in the Cut Bank field, Glacier County, northern Montana, the past two months has been slow with only required wells being drilled. A good producer was finished this week by Lon Crumley when it swabbed 345 barrels in the first 24 hours. Only one other well completed in the field this week, while four new locations were released.

Lon Crumley's 1 Alloted 114, NW NW SE 31-33n-5w, swabbed 345 barrels in the first 24 hours and is still swabbing 15 barrels an hour. The hole bottomed at 2880 feet with the producing sand topped at 2866 feet.

The Texas Company finished its last active operation for the field at present. For the first time in two years the company has no active well. Government 1, C SW NE 17-32n-5w, is rated for a 50-barrel well with total depth at 2960 feet.

Baker-Glendive

Montana Dakota Utilities Company's 1 Unit 8, NE NE NW 17-4n-62w, on Little Beaver Dome, Baker-Glendive anticline, Fallon County, eastern Montana, is waiting on packer to make test from 6739 to plugged depth of 6759 feet after enlarging bottom of hole with a 10½-inch wall scraper. Rig is up for company's 2 Unit 8, C NE SW 8-4n-62w. Company's 75, C SW 25-9n-58e, a test for gas in the Eagle sandstone, is drilling at 1565 feet on top of the Eagle.

MOUNTAIN STATES Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MONTANA		
GLACIER COUNTY—(Cut Bank Field)—		
Montana Power Gas Co., Langabeer Unit 1, se nw 17-35n-5w	¶19	2900
Hannah-Porter, Allotted 130 1, Lot 3, 6-32n-5w	65	2900
Manning & Marshall, Tribal 2, 120, Lot 8, 7-34n-6w	35	2971
Kately-Drumheller, Ward 4, Lot 3, 10-34n-6w	120	2912
WYOMING		
NIOBRARA COUNTY—Lance Creek Field)—		
Continental Oil Co., Apex Account 2, cse nw 34-36n-65w	1200	4026
WESTON COUNTY—(Osage Field)—		
Charles Stough 1, sw sw nw 4-46n-63w	3	304
Wheedon Oil Co. 12, 440 ft east and 200 ft north of swc 16-46n-63w	3	404
NEW MEXICO		
LEA COUNTY, (Eunice Field)—		
Atlantic O. P. Co., State 2-K, c ne sw 6-21s-36e	1250	3867
Gulf Oil Corp., Orcutt 4, c lot 16, 5-21s-36e	300	3902
State-Bell-Ramsey 9, c lot 5, 4-21s-36e	150	3870
Shell Pet. Corp., State 1-J, c se sw 32-20s-37e	100	3845
LEA COUNTY, (South Eunice Field)—		
N. G. Penrose & Rowan-Nichols Oil Co., Will Cary-Humble 2, c ne sw 22-22s-37e	68	3570
Samedan Oil Corp., et al, C. U. Parks 1, sw sw sw 14-22s-37e	100	3800
LEA COUNTY, (North Eunice Field)—		
Gulf Oil Corp., W. T. McCormack 1, c ne ne 32-21s-37e	170	3802
LEA COUNTY, (Monument Field)—		
Amerada Pet. Corp., J. R. Phillips 3, c sw ne 1-20s-36e	6000	3892
Sarah Phillips 1, se se sw 33-19s-37e	4500	3910
State 2-K, c ne nw 29-19s-37e	300	3960
Chas. H. Weir 5, c sw nw 35-19s-36e	3000	3955
Continental Oil Co., State 4-C, c sw nw 30-19s-37e	3600	3892
Gulf Oil Corp., G. C. Matthews 2, c sw se 6-20s-37e	500	3885
A. B. Reeves 1, c nw sw 29-20s-37e	80	3859
Ohio Oil Co., State-Elliott 4, c se se 30-19s-37e	4800	3933
Sun Oil Co., W. B. Maveety 6, c nw ne 35-19s-36e	900	3972
The Texas Co., State 1-K, c se se 18-19s-37e	6000	4000
LEA COUNTY, (South Jal Field)—		
Conoco-California Co., Eaves 2-A-19, c sw sw 19-26s-37e	2000	3200
LEA COUNTY, (East Jal Field)—		
Plains Prod. Co., R. L. Mosley-Repollo 1, c nw se 34-24s-37e	200	3551

*Failures; †Junked; ¶Million cu. ft. gas.

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HOUSTON, TEXAS

New Pool Named

IMPORTANT SHELL DISCOVERY CALLED "TEN SECTION" FIELD

WEEKLY STAFF REPORT

Los Angeles.—The Stevens area of Kern County, California, which embraces the state's most important discovery in recent years will hereafter be known as Ten Section oil field according to official announcements from both the Shell Oil Company and the state division of oil and gas. The name was chosen by the Shell Oil Company as indicative of the fact that it controls ten square miles of land surrounding the discovery well, Shell Oil Company's K. C. L. 1, which was bottomed in the brown shale at 7888 feet and completed June 2 flowing 744 barrels a day of 61.4 gravity clean oil and 12½ million cubic feet gas.

Since the field lies 10 miles west of Bakersfield and seven miles east of Elk Hills oil field on the floor of the San Joaquin Valley there is not even so much as surface topography to indicate the shape, trend, or extent of the field. The company has disclosed, however, that the geophysical surveys conducted prior to locating K. C. L. 1 indicated a dome structure. The new field's second well, Shell Oil Company's K. C. L. Stevens A 6-29, located about ¼ mile southwest from the discovery well, was spudded on July 1.

Union Oil Company's Battles 1 in the Adam area, five miles north of Santa Maria in Santa Barbara County, was bottomed at 2738 feet in Franciscan (Jurassic) metamorphics, and preparations are being made to run a liner and test production. The 8⅝-inch water string was set at 2133 feet and the water shut-off was approved. Production in this area is from fractured Monterey (Middle Miocene) shale which directly overlies the Franciscan. It is reported that an aggregate of approximately 100 feet of oil bearing fracture zones has been cored. This area, which has not yet been officially named, came into prominence with the completion on April 1, last, of Union Oil Company's Adam 1 flowing 2376 barrels a day of 16.4 gravity oil and 400,000 cubic feet of gas. Battles 1 is 660 feet south of Adam 1.

Deep Oil Show

Western Gulf Oil Company's S. P. Land Company 3, in the Cantua creek area north of Coalinga and about 40 miles southwest of Fresno, cored oil showings below 7000 feet. A formation tester was run and a large volume of salt water with a trace of oil was recovered. The hole is being cored ahead at 7105 feet in shale with streaks of sand and occasional showings of oil. Accurate data regarding the formations encountered are not available, but it is generally believed that the well is now in the Kreyenhagen shale (Eocene?).

Amerada Petroleum Corporation is grading the location for Happe 1 in Section 22-4n-2e, near the mouth of the Sacramento river on Suisun bay in Solano County. This well will be located one mile north and one quarter-mile west from Amerada Petroleum Corporation's Emigh 1, which was completed June 19 flowing 8¾ million cubic feet of gas with tubing and casing pressures of 1375 pounds and 1700 pounds, respectively. The development of a large and dependable supply of gas in this area adjoining the San Francisco bay region would prove to be of major importance.

Petroleum Securities Company's Home Ranch 3, in Sheills Canyon, Ventura County, was completed June 30, flowing 300 barrels a day of 37 gravity oil cutting seven percent with 1½ million cubic feet of gas. Present production shows a decrease to 160 barrels a day of 38.1 gravity oil and an increase to 3,600,000 cubic feet of gas. Flow is through one 75/64-inch choke, with tubing and casing pressures of 98 pounds and 515 pounds, respectively.

West American Oil Company's Del Amo 1, Section 3-4s-13w, Los Angeles County, was swabbed beginning July 1, and produced only salt water. Whether the water was entering from above or below the c.p. point is not known, but preparations are being made to recement the 5¾-inch combination oil string through perforations at 8495 feet. Depth is 9000 feet and the 5¾-inch is landed on bot-

CALIFORNIA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
INGLEWOOD—		
Standard, L. A. Inv. 78	3700	3460
KETTLEMAN HILLS—		
Standard, No. 67-29J	¶	8270
MIDWAY-SUNSET—		
General, Essex B-15	130	2388
So. Cerritos Oil Co., No. 1	75	1581
Texas Co., Midway-Sunset 15	350	2850
MOUNT POSO—		
General, Heiser 33	200	1596
MOUNTAIN VIEW—		
Hogan Pet. Co., Symons-CCMO-3	325	6005
Petrol Prod. Corp., Bloemer 1	1500	5895
Vesta Pet. Co., Hopkins 10	600	5105
ROUND MOUNTAIN—		
Shell, Caldwell 14	165	1934
SHIELLS CANYON—		
Pet. Sec. Co., Home Ranch 3	300	3899
KERN COUNTY—		
Bourke & Dyer, Stocker 1	*	1936
R & R Dev. Co., R & R 1	*	872
Poso Pet. Co., No. 1	*	2004

*Failures; †Junked; ¶Million cu. ft. gas.

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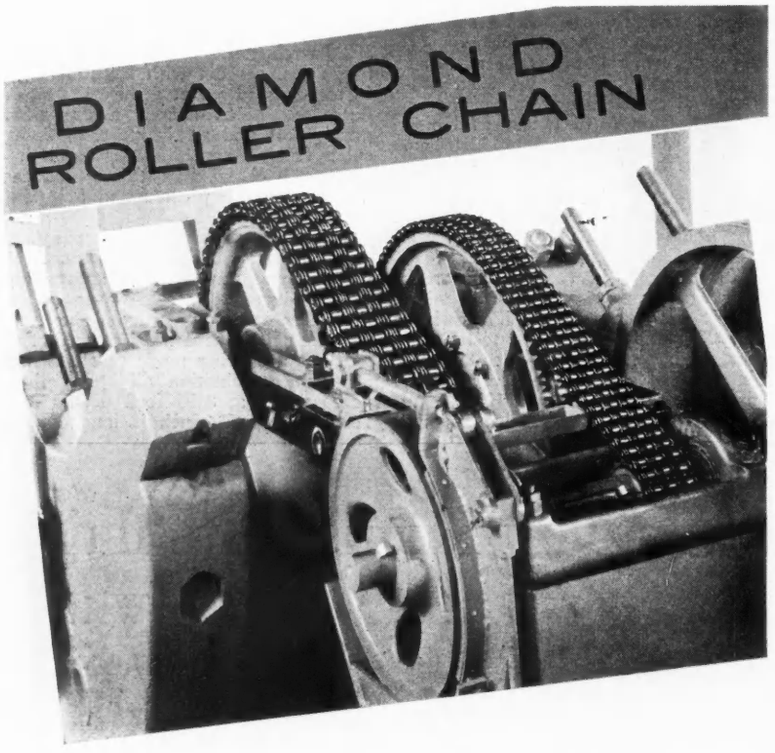
tom and perforated from 9000 feet to 8495 feet. This project is a wildcat deep test well at the southeast edge of Dominguez oil field and near a projection of the field's structural axis.

Eastern Oil Company's Eastern 1, Section 22-2s-15w, is now flowing 250 barrels a day gross fluid with cuts which vary from 20 percent to 60 percent mud. The oil when clean tests 14 gravity. The well was completed June 27 and has since been ridding itself of the heavy mud and weight material pumped into the hole to control excessive pressures prior to running the water string. This well is a semi-wildcat test at the east edge of Playa del Rey field. It attracted interest when a near blowout of gas occurred while coring at the top of the oil sand at 7398 feet. Although it admittedly will require a long time to rid the formations of about 250 tons of weight material and many thousands of barrels of mud, the showings to date have been disappointing. The gravity of the oil is far below expectations, tending to indicate that it is coming from the nodular shale which overlies the oil sand, rather than from the oil sand itself. Depth is 7432 feet with top of the oil sand at 7398 feet and top of the nodular shale at 7268 feet. Seven-inch water string was cemented at 7295 feet, 157 feet of 4¾-inch liner, including perforations from 7370 feet to 7432 feet was landed on bottom, and 2½-inch tubing was hung at 7399 feet.



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Bartholomae Oil Corporation's Stern 2, at the west end of East Coyote field, 10 miles north of Santa Ana in Orange County, was completed June 30 for a production test pumping 125 barrels a day of clean oil. It is reported that the electrical log record showed two potential oil zones and that the 6⅝-inch casing was perforated opposite only the upper of these prior to this test. The lower zone will also be tested separately. Depth is 4717 feet, with 6⅝-inch casing cemented on bottom. This project is a deep test and information as to depths of zones and perforations is not available.

Standard Oil Company's L. A. Investment 78, Inglewood field, was completed June 27, flowing 3160 barrels in 20 hours of 35 gravity oil cutting 1 percent. Flow was through ¾-inch and 1 15/16-inch chokes and tubing and casing pressures were 100 pounds and 460 pounds, respectively. Production is 2754 barrels a day of 35.0 gravity oil cutting 0.1 percent, with 1,615,000 cubic feet of gas. Flow is through two 1 13/16-inch chokes with tubing and casing pressures of 75 pounds and 760 pounds, respectively. Depth is 4024 feet, with 8⅝-inch water string cemented at 3388 feet—664 feet of 6⅝-inch liner including liner, including perforations 3388 feet—3599 feet, 3639 feet—3834 feet, and 3899 feet—4013 feet, landed on bottom, and 2½-inch tubing hung at 3896 feet.

MICHIGAN

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BAY COUNTY—		
A. H. Webber, De Long 1, 16n-3e, se se se-35	*	3576
CLARE COUNTY—		
Fortney Oil Co., Neville 1, 17n-3w-19	*	3907
GRATIOT COUNTY—		
Crystal O&G Co., Shaver B-3, 10n-4w, c se se-4	¶13	990
GENESEE COUNTY—		
Jerome Nadell, Olds 1, 9n-8e, nw ne se-35	*	1623
ISABELLA COUNTY—		
Anton Wezensky, Fee 1, 15n-3w, ne nw ne-30	72	3666
MECOSTA COUNTY—		
Wiser Oil Co., Haner 1, 13n-7w, c nw ne-31	¶27	1327
House 2, 13n-7w, c nw nw-31	¶1½	1313
Refiner Pet. Co., Miller 2, 13n-7w, c ne sw-34	¶4½	1283
Columbia O&G Co., Sweet 2, 13n-8w, c nw nw-25	¶5	1328
MIDLAND COUNTY—		
King Drilling Co., Gould 1, 15n-2w, sw nw ne-19	*	3680
Pure Oil Co., Bond Root 8, 13n-2w, se nw-3	75	3458
MONTCALM COUNTY—		
Frank Davis, Bloomfield 2, 12n-7w, c se nw-5	¶47	1316
Hyatt & Norton, Eckert 2, 12n-7w, c ne se-10	¶47	1300
Dawes 1, 12n-7w, c se se-5	¶34½	1291
Edmore Bank 2, 12n-7w, c nw se-2	¶17	1299
Mich. Ohio Oil Co., Bacon 1, 12n-7w, c sw nw-12	¶2	1306
J. W. Leonard, Brown 2, 10n-5w, se ne sw-11	50	3200
Rowmor Corp., Honderich 2, 10n-5w, sw nw nw-1	75	3187
OGEMAW COUNTY—		
Mills Oil, Jaqua 1, 21n-3e, nw ne sw-6	12	2629
Webber Oil Co., Valley 1, 22n-2e, sw se ne-35	75	2663
United Driller, Tiffin 1, 22n-2e, ne se se-19	10	2668
Consolidated Pet. Co., Crow 4, 22n-2e, ne ne sw-36	80	2524
Ogo Oil Co., Hustead 1, 22n-2e, se se nw-36	70	2620

*Failures; †Junked; ¶Million cu. ft. gas.

EASTERN FIELDS WEEKLY STAFF REPORT

Completions

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
ATHENS COUNTY—		
Ohio G & F, S.S.C. Co. 139.....	*	1210
BELMONT COUNTY—		
E. O. Perkins, A. J. West Co. 1....	*	1514
GUERNSEY COUNTY—		
Bebout & Co., E. C. Quillan 9.....	22	3634
George Jewell & Co., W. H. Black 1	¶	1260
LICKING COUNTY—		
Marle & Co., Wilson & Co. 2.....	11	760
G. H. Long, Eliza Fulton 5.....	10	763
Long Prod. Co., F. Johnson 2.....	25	...
A. Stricker, Sarah E. Patton 5.....	4	722
Bishop & Patton, Jane Hurst 5.....	?	...
Everette & Co., B. G. Nethers 2....	3	...
Hoskinson, E. J. Edwards 1.....	2	...
KNOX COUNTY—		
Kidwell, D. C. Highman & Co. 1...	*	...
MEIGS COUNTY—		
Avery Roberts, Delmar Whaley 1...	*	...
Schuster & Co., Arvinn Thomas 3..	¶	745
C. M. Athey & Co., Lewis L. Rose 1	*	2204
Meigs Dev. Co., Mary C. Wheeler..	¶	1938
MONROE COUNTY—		
Beardmore Gas, B. H. & N. C. Beardmore 5	¶	1514
MUSKINGUM COUNTY—		
Kenova O. & G., A. Dalmer Hurop 5	¶	1793
Skinner, Ohio Gas & Fuel 1.....	*	...
NOBLE COUNTY—		
Barnsville Dev. Co., Ray Davis 4..	¶	1415
Harry Mosely & Co., John Blake 4..	¶	1600
Turner Estate, D. Bean & Co. 2....	1	...
PERRY COUNTY—		
Monahan, C. L. Bullock & Co. 5...	5	...
Longdreth, Allegheny Co. 21.....	3	...
Ohio Fuel Gas, F. G. Rhodes 1.....	20	3224
Wehrle Bros., Geo. F. Schrider 1...	*	2911
TUSCARAWAS COUNTY—		
Capital Drlg. Co., Stewart Asher 6	¶	...
George Jewell & Co., J. C. Bollingson 6	¶	950
WASHINGTON COUNTY—		
Pollard D. Howiler, Witcherman 13.	*	1682
Bill Oil Co., S. J. & Mary Weddle .	2	1625
Aurleus, Ripley D. Ripley 2.....	2	...
Ludlow Day, W. S. Laufer 8.....	2	...
Board, Williams Bros. 1.....	¶	...
Graham, Bailey Oil & Gas 1.....	*	...
Knox, Ohio Fuel & Gas 1.....	*	...

WEST VIRGINIA

BOONE COUNTY—		
Peytonia Coal Land, Owens-Illinois Glass 27	¶	...
CABELL COUNTY—		
Vance, West Va. Gas Co. 1.....	¶	...
Methodist Church, W. C. Kingery & Co. 1.....	¶	...
Bailey, Kentucky West Virginia 1..	¶	...
GILMER COUNTY—		
Garrett, C & H Oil Co. 1.....	¶	...
Steinbeck, F. G. Bish 1.....	¶	...
KANAWHA COUNTY—		
Baxter & Co., Columbia Carbon Co. 1	¶	...
Campbells Coal Co., Godfrey L. Cabot, Inc. 9.....	¶	...
Christi, Owens-Illinois Glass 2.....	¶	...
LINCOLN COUNTY—		
Lincoln Mineral Co., Harvard Gas Co. 4	¶	...
PLEASANTS COUNTY—		
Nash, McAtee & Gabert 5.....	1	...
RITCHIE COUNTY—		
Grant Shuman, G. T. Burney 1.....	*	...
Pyles, C & H Oil Co. 1.....	1	...
WAYNE COUNTY—		
Mullens, Maebohn & Huffman 1....	¶	...
WETZEL COUNTY—		
Main, J. G. Cochran & Co. 7.....	5	...

*Failures; †Junked; ¶Million cu. ft. gas.

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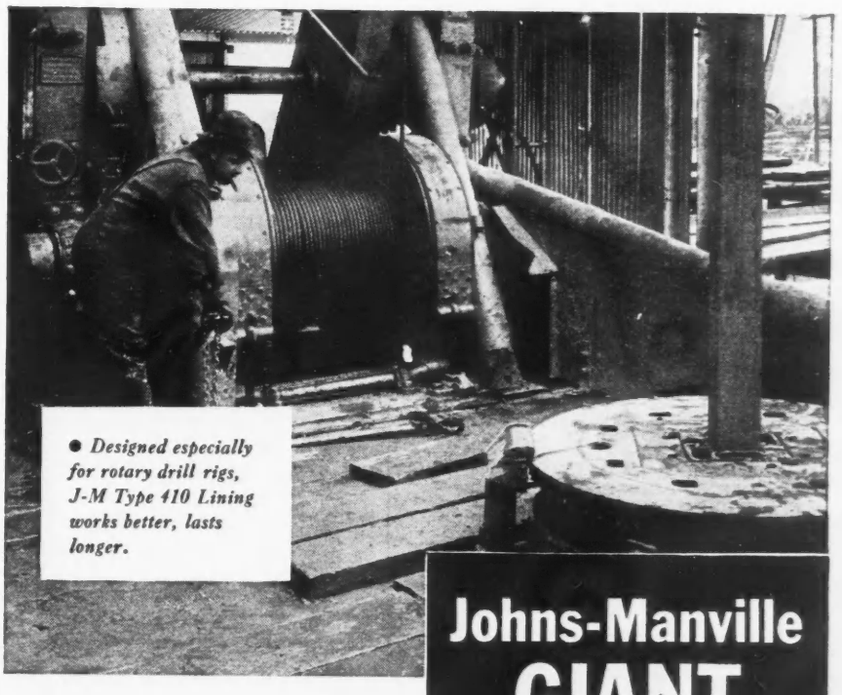

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THE OIL WEEKLY REPORT ON IMPORTANT

Wildcat Tests

ALABAMA

HOUSTON COUNTY—Rice O. & G. Co.'s Oakley Est. 2, sr td 3580 ft.

MOBILE COUNTY—J. C. Prine's King 1, 4-1n-4w, pb to 2600 ft, testing 2500-2600 ft, old td 3186 ft. Grand Bayou O. & G. Co.'s Fee not given, 24-7s-3w, lcn.

ARKANSAS

BRADLEY COUNTY — Phillips Pet. Co.'s Murphy Land Co. 1, nw nw 12-17-11, top red beds 2921 ft dr 3820 ft sandy lime and shale.

CALHOUN COUNTY — Ben Barnett, Tr.'s Freeman Smith 1, se nw sw 36-15-14, sd 5519 ft. Proetz & Brown's Calion Lbr. Co. 1, se sw 22-15-15, cored sand 4825-45 ft, coring ahead 4873 ft.

COLUMBIA COUNTY—J. C. Buckbee, Tr.'s J. B. Wilson 1, sw ne 17-17-15, elev 319 ft sd 4510 ft.

CLEVELAND COUNTY—Diffie et al's Ross 1, sw ne 11-11-11, dk. R. L. Saxon's Tipton 1, sw ne 13-11-12, dk.

CRAWFORD COUNTY — Trumbo et al's Craddock 1, c nw ne 3-11-30, top Miss. lime 965 ft, top Wilcox 1327 ft, sd 1600 ft.

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HOUSTON, TEXAS

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abandoned.*
bbls—*barrels.*
br—*building rig.*
b.s.—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg.—*fishing.*
ft—*feet.*
hfw—*hole 'ull o' water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oilf—*oil in hole.*
owdd—*old well drilling deeper.*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
sog—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

DALLAS COUNTY — Kel-Mac Oil & Roy. Co.'s Owens 2, nw sw 26-10-16, arr abn 1925 ft. McCall & Kelly's Owens 1, 26-10-16, owdd 1456 ft.

HEMPSTEAD COUNTY — Easton & May's Conway 1, ne sw 20-12s-27w, elev 290 ft, massive anhydrite 1913-69 ft arr abandon td 2862 ft.

LA FAYETTE COUNTY — A. M. Neely's Meek 1, ne nw 35-19-25, rur.

LITTLE RIVER COUNTY—Roberts et al's Hall 1, se se 22-13-29, owdd, td 1950 ft.

LONOKE COUNTY—Frank F. Silver's Joe Chambers 1, sw ne nw 17-2-27, elev 229.2 ft, sd 1610 ft hd shale.

MILLER COUNTY—King Oil Corp.'s Mann 1, 2-16-26, top Nacatosh 1605 ft, sd 2330 ft. Deep Rock Oil Co.'s Williams 1, nw sw nw 6-16-25, top Nacatosh 1270 ft fsh td 4720 ft shale. Joiner et al's Montana Realty Co. 1, 3-17-28, top Arkadelphia 1060 ft dr 2210 ft shale. McClanahan et al's Montana Lbr. Co. 1, sw sw 2-20-27, rur.

OUACHITA COUNTY — Carnes & Harrell's Robertson 1, nw se 7-12-19, elev 176 ft sd 2487 ft. O. F. Whittaker's Howard 1, nw ne 20-12-16 no report. Lion OR Co.'s Reynolds-Berg 1, se ne 28-15-15, coring 5140 ft. Phillips Pet. Co.'s Arnold 1, ne sw 27-15-15, arr make ds test 5001 ft. Phillips Pet. Co.'s Cheatham 1, sw ne 27-15-15, circulating td 4910 ft. Phillips Pet. Co.'s J. M. Farris 1, sw ne 27-15-15, rig up. Phillips Pet. Co.'s Rose 1, ne sw 28-15-15, dr 4760 sandy lime and shale. Phillips Pet. Co.'s Harris 1, sw ne 28-15-15, cemt 9⅝-in csg 4803 ft. Phillips Pet. Co.'s Mary Murphy 1, ne ne 28-15-15, dk. Mary Murphy 2, ne ne 28-15-15, lcn. Standard Oil Co. of La.'s Reynolds B-3, se ne 27-15-15, 8⅝-in csg 4892 ft, 5 mil ft gas, 65 bbls oil td 4912 ft. Reynolds B-4, nw sw 27-15-15, rur. American Liberty Oil Co.'s (Jno. Pugh) Hildebrandt 1, se se 28-15-15, elev 162 ft 7-in csg 4904 ft, hole full fluid 97% s.w., td 4914 ft. J. E. Crosbie, Inc.'s Sewell 1, sw ne 33-15-15, rur. Edwin M. Jones' J. D. Reynolds A-1, sw sw 27-15-15, lcn. J. D. Reynolds A-2, sw sw 27-15-15, lcn; E. Murphy 1, ne ne 28-15-15, lcn; E. Murphy 2, nw ne 28-15-15.

UNION COUNTY—J. C. Buckbee, Tr.'s Ezzell 2, ne nw 13-17-15, coring 5160 ft.

CALIFORNIA

FRESNO COUNTY

CURRY MOUNTAIN—Standard's Camino 1, 1-21-15, dr blue shale and gray sand 1005 ft.

CANTUA CREEK—Western Gulf's S. P. L. Co. 3, 3-17-15, dr sand and shale 7104 ft.

KERN COUNTY

KERN FRONT—American Explor. Co.'s Exploration 1, 16-28-27, td 2862 ft, landed 54 ft perforated, bailing.

POSO CREEK—Bargol Oil Co.'s Bargol 1, 11-27-27, td 3300 ft, co. Bourke & Dyer's Stockton 1, 28-26-28, abn 1936 ft in green clay. McAdams Oil Co.'s No. 1, 32-27-28, rur.

JASMINE—Cochran Oil Co.'s Bishop 1, 31-25-27, dr sand 960 ft. Doyle Pet. Co.'s Quinn 1, 15-25-27, lcn.

ELK HILLS—Elk Hills Pet. Corp.'s No. 1, 14-31-24, dr shale 3024 ft.

DEVIL'S DEN—Den Pet. Co.'s Bates 1, 20-25-19, dr shale 560 ft.

ARVIN—General's Swanson 1, 26-31-29, lcn.

GRAPEVINE—Hall-Baker Co.'s No. 1, 12-10-19, sdtr, td 1980 ft. Ohio's T. I. T. 1, 36-11-19, dr sand and shale 4150 ft. Reserve Oil & Gas Co.'s Ritchie 33-2, 33-11-19, br shale 1407 ft; Tejon 2-6, 2-10-19, rur.

DOMINION — Modoc Pet. Co.'s Vedder-Bowles 2, 21-26-28, td 1521 ft, wocs 8⅝-in at 1518 ft. Santa Carla Oil Co.'s Bass-Goodknight 1, 19-26-28, dr brown shale 1810 ft.

MOUNTAIN VIEW — Mohawk Oil Co.'s Earl Fruit 1, 10-31-29, dr sand and shale 5524 ft. Treasure Dr. Co.'s Treasure 1, 12-30-28, sd 5390 ft.

STRAND—Ohio's K. C. L. 1, 1-30-25, dr sand and shale 8424 ft.

FRUITVALE—Oil Inc.'s No. O-1, 26-29-27, lcn.

MOUNT POSO—Poso Pet. Co.'s No. 1, 2-27-27, abn 2004 ft.

NORTH BELRIDGE—Rio Grande Oil Co.'s Layman 1, 18-28-20, dr shale 760 ft.

EDISON—R & R Dev. Co.'s R & R 3, 32-30-30, abn 872 ft.

KERN RIVER—Seven Spot Oil Co.'s No. 1, 13-26-27, td 1228 ft, plug 1210 ft, ran liner, water broke in, trying to locate.

LOST HILLS—Standard's United 1, 2-26-20, td 6887 ft, fsh dr pipe.

COMANCHE POINT—Tejon Ridge Co.'s Tejon 1, 23-32-29, dr blue shale 2427 ft.

SAN EMIDIO—Texas Co.'s K. C. L. C-11-49, 11-11-22, dr brown shale 7751 ft.

MISCELLANEOUS

ALAMEDA COUNTY—Seaboard Oil Co.'s Johnson 1, 13-3s-3e (Tracy) rur.

HUMBOLDT COUNTY—Texas Co.'s No. 2, 22-3-1 (Eureka), td 4365 ft, broke circulation with 1700 lbs pressure, trying to loosen dr pipe.

KINGS COUNTY—Associated's Avenal 1, 35-23-17, dr hard brown shale 1380 ft. Herndall & Associates' Spreckles 1, 16-24-18, td 4201 ft, plug 1985 ft, bldg new rig. Trico Oil & Gas Co.'s Calif. Western 1, 7-23-23, lcn.

MADERA COUNTY—Pure Oil Co.'s Chowchilla 4, 20-10-14, dr shale 4670 ft.

MERCED COUNTY—E. R. Fantz's Cunningham 1, 22-7-16, lcn.

SAN BENITO COUNTY—Associated's Murphy Ranch 1, 5-12-4, rur.

SAN JOAQUIN COUNTY—Amerada's F. D. L. 5, 15-2-5, td 6160 ft. Plug 4100 ft, water at 4021 ft, to replug. Standard's McDonald Island 2, 25-2-4, bldg rig.

SAN LUIS OBISPO COUNTY—Avila Oil Co.'s Gibson 1, 10-31-13, rur. Barnsdall's Wreden 1, 24-28-17, td 3473 ft, wocs 8⅝-in at 3465 ft. Birch-Royer Oil Co.'s Tatchett 1, 33-31-13, td 1840 ft, straightening hole. Crail Bros.' Vedder 1, 8-32-13, rig. A. T. Jergins Trusts' Roderiguez 1, 5-32-13, spud June 28, dr; Roderiguez 2, foundation. J. C. Theriot's Holland 1, 22-32-23, sd 2135 ft. Willett Oil Assn.'s Jack 2, 10-25-15, sd 3648 ft.

SOLANO COUNTY—Amerada's Hoppe 1, 22-4-2, grading.

TEHAMA COUNTY—Northern Cos Pet. Co.'s Ewers-Mooney 1, 25-24-3, dr hard sand 8058 ft.

TULARE COUNTY—W. H. Fortine's Mosesian 1, 22-27-26, dr sandy shale 2760 ft.

MONTERREY COUNTY—North Dome-Cholame Hills Oil Co.'s Hillman 1, 15-24-14, rig. Shell's Branch 1, 34-24-10, td 8994 ft, plug back to test.

SANTA BARBARA COUNTY

COAL OIL POINT—Bankline Oil Co.'s No. 2, permit 191, td 5510 ft, redr new hole 2925 ft.

LOMPOC—O. C. Field's (formerly H. G. Freeman La Brea 1) Santa Rita 1, 11-7-33, dr sand and shale 1490 ft. Lompoc Pet. Co.'s Beauterbough 2, 18-7-34, sd 3940 ft, plug 2700 ft. York Oil Co.'s York 2-A, 33-8-34, rur.

EL CAPITAN—La Canada Oil Corp.'s No. 2, 3-4-30, rig.

BETTERAVIA—E. H. Moore's Union Sugar A-1, 25-10-35, dr shale 4535 ft.

BARDSDALE—Best Pet. Co.'s Frey 1, 2-3-19, td 4512 ft, plug 4000 ft, to cement 8⅝-in

at 3960 ft. Laying & Jacobs' No. 1, td 1200 ft, rur. Petroleum Securities' Elkins 1, 7-3-19, td 5627 ft, recement 9-in at 1925 ft, testing. Union's Dryden 10, 12-3-20, dr shale and sand 6400 ft.

OXNARD—General's McGrath 2, 26-2-35, dr hard shale 8128 ft.

JAVOB—General's Padre 1, 15-3-24, grade.

SOUTH MOUNTAIN—Honolulu Oil Corp.'s Hobson 1, 23-3-21, wocs 16-in at 300 ft, bottom.

PIRU—R. R. Johnson Corp.'s Rubel 1, 21-4-18, sd 1640 ft, plug 1300 ft.

SESPE CANYON—Merchants Pet. Co.'s No. 1, 1-4-20, bldg tramway.

VENTURA—Ventura Explor. Co.'s Sexton 1, 30-3-22, dr sand streaks shale 8210 ft.

SOUTHERN CALIFORNIA

NEWHALL—Barnsdall's Rancho S. F. 1, 26-4-17, foundation. Holbrook Pet. Corp.'s Newhall L & F Co. 1, 26-4-16, dr shale 760 ft.

ARTESIA—M. T. Bernstein's Millard 1, 25-3-12, td 4389 ft, fsh.

NORTH LONG BEACH—Geo. L. Clayton's No. 1, 31-3-12, sd 6765 ft, will drop from report.

TORRANCE—Codri Oil Co.'s No. 1, 28-4-13, td 3902 ft, plug 3710 ft, perforated 3525-29 and 3429-45 ft, bailing. Eyer Pet. Co.'s No. 1, 20-4-13, td 3794 ft, pumping 100 bbls 14 gravity oil, 6 percent mud. Jas S. Hull's No. 1, 20-4-13, td 4012 ft, to cement 8⅝-in at 3875 ft.

GARDENA—Crude Oil Dr. Co.'s (was A. C. Edington) No. 1, 31-3-13, rur.

WILMINGTON—General's Terminal 1, td 3057 ft, recovered oil string, coring os. Harbor Dr. Co.'s No. 1, 33-4-13, td 3566 ft, pumping 120 bbls 17.6 gravity oil, cut 2 percent. Royalty Service Co.'s Banning 11-1, 28-4-13, material.

PUENTE—McVicar-Roods' Sentous 1, 6-2-9, dr gray sand 3010 ft. Numac Oil Co.'s (was Vega Pet. Corp.) Rowland 2, 14-2-10, td 2545 ft, plug 2500 ft, co.

PALOS VERDES—Pamaco Royalty Co.'s Burkhard 1, 2-5-14, rig.

ROSECRANS—Republic Pet. Co.'s Republic Trust 1, 18-3-13, dr lower Maxwell zone 5387 ft.

EL NIDO—Shell's Lloyd-Dabney 1, 33-3-14, spud 6/30, cemented 13⅜-in at 889 ft, dr clay.

DOMINGUEZ—West American Oil Co.'s Del Amo 1, 3-4-13, td 9000 ft, plug 8495 ft, ran 5¾-in combination string, swabbed all salt water, to recement through perforations.

ORANGE COUNTY — California Eastern's Verde 1, 35-3-9, dr hard sand and conglomerate 3690 ft. Hillman & Long's Westminster 1, 14-5-11, sd 7701 ft. Shell's Anaheim Sugar 3-1, 7-6-10, spudded 7/1. Geo. Terry's Gun Club 1, 17-5-11 (Sunset Beach), td 5345 ft, to resume dr.

SAN BERNARDINO COUNTY—Equitable Pet. Explor. Co.'s No. 1, 11-10-5 (Barstow), dr brown shale 2482 ft. Melbourne Pet. Co.'s Abacherle 2, 12-3-8, lcn. Tehama Pet. Co.'s Kraemer-Backs 2, 33-2-9, td 560 ft, running 12½-in; Pellissier 1, 4-3-8, dr shale 465 ft.

COLORADO

ADAMS COUNTY—Glendridge Oil Co., Hills 1, csl se se 27-3s-64w, sd 4262 ft. Riddle Petroleum Co., Baxter 1-C, sw 2-3s-6e, dr 1100 ft.

ARCHULETA COUNTY—Oil City Petroleum Co. & Archuleta Oil & Gas Co., Reeder 1, swc Lot 5, 24-33n-2e, dr 860 ft.

BOULDER COUNTY—Boulder Production & Drilling Co., Maxwell 2, sw sw ne 24-1n-71w, spd.

COSTILLO COUNTY—L. R. Lane, Midwest Land & Cattle Co. 1, nw nw nw 24-31s-94w, dr 500 ft.

LARIMER COUNTY—Continental Oil Co., Buckeye U. P. 8, cne sw 31-10n-68w, dr shale 2601 ft.

PARK COUNTY—South Park Oil Co., State 1, se se sw 16-11s-75w, sd 4586 ft. South Park Oil Co., LeBert 1, ne ne nw 21-11s-75w, dr 250 ft.; Lemarr 1, ne ne ne 34-11s-75w, cellar completed.

WELD COUNTY—Continental Oil Co., State Bank of Trenton 1, csw ne 21-8n-59w, dr 6300 ft.

NORTH LOUISIANA

BIENVILLE PARISH—J. W. Leonard et al's Courtney Hrs. 1, se se 5-17n-7w, spd 13⅜-in csg 330 ft. Rondeau et al's Locke 1, ne nw ne 9-15n-10w, elev 180 ft rur. Walters et al's Davis 1, 3-16n-9w, dk.

BOSSIER PARISH—Bowman-Tidwell's Nattin 1, 15-22n-14w, dr 2100 ft. Humphreys et al's Bulkley 2, se se 35-21n-13w, rur. Producers O&G Co.'s J. A. Skannal Est. 1, sw sw 22-17n-12w, dr 3971 ft lime. Triangle Drlg. Co.'s H. L. Skannal 2, sw se 23-17n-12w, elev 216 ft 9⅝-in csg 3784 ft dr 3800 ft. United Gas Pub. Serv. Co.'s Skannal D-1, 22-17n-12w, elev 186 ft, base anhydrite 4199 ft cemt 7-in csg 5165 woc td 5210 ft.

CADDO PARISH — Pyramid O&G Co.'s Wheeler A-1, 16-18n-16w, elev 250 ft co to deepen td 5210 ft. J. B. Hutchinson, Tr.'s Colquitt 1, 28-16n-13w, rur. Fallon Oil Co.'s (formerly Forbing-Persian Oil Co.) Cupples 1, 24-16n-13w, rur. Prairie River Oil Co.'s Hutchinson 1, sw nw 15-15n-12w, spd dr 1065 ft. R. E. Dalton's Leon Noel 1, sw se se 4-21n-14w, mim.

CLAIBORNE PARISH—Sugar Creek Synd. et al's Darrett 2, 31-20n-5w, elev 324 ft sd redr 7777 ft. E. T. Oakes' Patton Est. 2, ne ne 1-20n-5w, elev 357 ft base massive anhydrite 4238 ft, coring 4365 ft lime. Martin & Langford's White 1, se se 26-21n-8w, rur.

CALDWELL PARISH — Leigen et al's La Cent Lbr Co. 7, ne nw 13-14n-2w, rur.

DE SOTO PARISH—W. F. Hyde's Ramsey 1, se nw 36-11n-11w, sd 960 ft. Jas. E. Carlson's Garland 1, nw nw 7-14n-14w, woc 12½-in csg 105 ft, dr 470 ft.

GRANT PARISH—Tri-State Dev. Co.'s Ethridge 1, ne ne 19-7n-3e, sd 3012 ft.

JACKSON PARISH—Zeigen et al's La. Cent. Lbr. Co. 5, ne nw 13-14n-2w, owdd, td 1770 ft.

LINCOLN PARISH—Lide & Greer's S. Gardner 1, 10-17n-4w, elev 268 ft tested 10 mil ft gas 6483-98 ft, 7-in csg 6551 ft, completed 67 mil ft gas td 6574 ft.

MOREHOUSE PARISH—Henry E. Rondeau et al's Clark 1, se ne 10-20n-7e, elev 90 ft rur.

NATCHITOCHES PARISH — B. G. Morrison's Moffet 1, sec 19-10n-10w, woc 12½-in csg 220 ft.

RAPIDES PARISH—Beatty, Bowles et al's Haas 1, ne ne 18-1s-2e, dr 3562 ft.

RICHLAND PARISH—J. S. Morrissey's Jones 1, 15-18n-7e, coring 2065 ft. Arthur Wray's Slocum 1, 10-17n-6e, dr 2585 ft.

RED RIVER PARISH—H. D. Conley et al's Long-Bell 1, ne ne 19-13n-9w, sd 3200 ft. T. B. Shaw et al's Teekel 1, 34-13n-10w, 7-in csg 2500 ft, sd 2830 ft.

SABINE PARISH—Keen et al's Long-Bell 1, 5-8n-13w, rur. A. H. Tarver's Baker 3, 36-8n-12w, spd dr 3130 ft. Whitehurst et al's Whitney Corp. 1, nw ne 8-9n-13w, 9⅝-in csg 3234 ft, setting csg 3585 ft.

TENSAS PARISH—H. M. Jones' Chicago Mill & Lbr. Co. 1, nw sw nw 29-12n-10e, base Jackson 776 ft, 8⅛-in csg 776 ft, td 779 ft. Clara Nook Plant. 1, nw sw 32-12n-10e, dr 640 ft.

WEBSTER PARISH — J. P. Evans' T. H. Johnson 1, sw nw sw 36-18n-9w, spd. Ohio Oil Co.'s R. L. Holloway 6, ne sw 23-21n-10w, elev 210 ft cored 25 ft sand in Travis Peak, mov in 7-in csg td 8369 ft. W. C. Feazel et al's Hooper 1, 8-17n-9w, sd 3016 ft. Red Hawk Oil Co.'s Baker 1, se nw 9-23n-9w, 12½-in csg 200 ft, sd cur titles. Skidmore et al's Barnette 1, nw sw 29-17n-9w, dr 525 ft.

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ACADIA PARISH—Magnolia's Homeseekers 1, Esterwood prospect, 54-10s-1w, abn 9456 ft.

ALLEN PARISH—Humble's Bel 2, Reeves prospect, 28-6s-2w, dr sand, no shows, 3752 ft.

CALCASIEU PARISH—Fred Oil Co.'s Faist 1, 26-8s-10w, sd 4122 ft.

CAMERON PARISH—Magnolia's Hebert 1, Big Lake area, 13-12s-9w, testing 8618 ft.

IBERIA PARISH—Texas Co.'s State 1, Fausse Point, 35-11s-8e, dr sand rock 3264 ft; Vermilion Bay B-1, 20-15s-6e, dr clay 924 ft.

JEFFERSON DAVIS PARISH—Shell's Lacassine 1, Hayes prospect, 20-11s-5w, fsh 9253 ft. Stanolind's Calcasieu National Bank 1, South Jennings prospect, 15-10s-3w, reaming 6708 ft. Strake's Miller Estate 1, Woodlawn prospect, 7-9s-5w, coring salt water sand 7880 ft.

ST. BERNARD PARISH—John Cartwright's Nunes 1, e of New Orleans, 10-13s-12e, sd 2648 ft.

ST. JAMES PARISH—Shell's Colonial Sugar 1, Convent prospect, 5-12s-5 dr shale 4489 ft.

ST. MARTIN PARISH—Texas Co.'s Mongouloi 2, 14-10s-9e, fsh 7349 ft; St. Martin Land Co. 8, 9-8s-7e, dr shale 8465 ft.

TERREBONNE PARISH—Humble's Continental 1, 30-17s-14e, dr sand 4398 ft.

VERMILION PARISH—Continental's Hebert 1, Abbeville prospect, 20-12s-3e, reaming 10,548 ft.

KANSAS

BARBER COUNTY—Sinclair Prairie's Gentry 1, ne ne ne 1-33s-15w, rur.

BARTON COUNTY—Davison et al's Birzer 1, sw se sw 22-17s-12w, sd 3250 ft. Schermerhorn Oil Co.'s Hunter 1, ne ne ne 29-18s-15w, pb 3543 ft, gauged 39 million ft gas. Wakefield & Johnson's Bumm 1, sw ne ne 22-19s-12w, dr 3275 ft. Rosespring Drlg. et al's Rick 1, sw sw sw 1-19s-11w, rng csg at 3316 ft. Brouk et al's Keil 1, se se ne 11-16s-15w, dr 2225 ft. Rose & Lant's Redetzke 1, ne nw nw 10-16s-11w, set 10-in csg 714 ft.

BUTLER COUNTY—Ellis et al's Pettit 1-A, se se nw 21-28s-6e, td 3163 ft, 1000 gals acid, no test. Rex & Morris' Olson 1, nw sw se 15-28s-6e, sd 3059 ft. McGinnis et al's Hinnen 1, ne ne sw 18-24s-4e, dr 2545 ft. Solomon's Church 1, sw ne se 8-28s-5e, sd 50 ft. Dalton et al's Miley 1, csw ne 17-27s-5e, sd 350 ft.

CLARK COUNTY—Olson & Watchorn's Morrison 1, cse sw 17-32s-21w, woc at 250 ft.

COWLEY COUNTY—Braden Prod. Co.'s Sparks 1, se se nw 35-33s-4e, td 3266 ft, d & a. McKnabb's Community 1, cne nw 14-34s-3e, dr 2515 ft. Morton et al's Rogers 1, se se ne 1-31s-4e, dr 1575 ft.

EDWARDS COUNTY — Stanolind-Elwell's Donovan 1, cse se 14-26-18w, dr 4445 ft.

ELLIS COUNTY—Jones Bros. & Carpenter et al's Solomon 1, se se sw 28-11s-19w, td 3629 ft, pot 600 bbls oil, comp. Rosespring et al's Union Pacific 1, ne ne ne 9-13s-20w, dr 3700 ft. Empire's Herl 1, se se se 22-15s-19w, sd 2775 ft. Parrish & Dennam's Walter 1, se sw se 14-13s-17w, dr 3483 ft. Jones & Shelbourn's Gunther 1, se se sw 9-11s-19w, dr 1690 ft. Vickers Pet. Co.'s Kraus 1, sw sw nw 22-14s-19w, td 3444 ft, rust. Bradley Oil et al's Penny Wann 1, se se se 13-15s-20w, td 3340 ft, rust. Empire O. & R. Co.'s Samuelson 1, ne ne sw 31-11s-16w, set 15-in csg 475 ft. Kansas Development Co.'s Haller 1, se se nw 10-11s-18w, dr 2715 ft. Bridgeport Mach.'s Ubert 1, ne ne nw 12-13s-18w, dr 1110 ft. Philham Oil Co.'s Gerstner 1, sw sw se 24-14s-17w, set 13-in csg 725 ft. Trigg et al's Armbrister 1, se se sw 6-11s-19w, dr 2975 ft. Wolf Creek et al's Polifka 1, sw sw ne 24-13s-18w, ru. Lario O. & G. Co.'s Cress 1, ne ne ne 13-11s-17w, lcn. Champlin Ref. et al's Hadley 1, se sw ne 30-11s-17w, mim. Lario O. & G. Co.'s Marshall 1, nw se ne 36-11s-18w, cellar.

ELLSWORTH COUNTY—York State Oil Co.'s Koestle 1, nw nw se 12-17s-9w, dr 965 ft. Roy Ramsey et al's Gregory 1, sw sw se 25-16s-9w, dr 1945 ft.

GRAHAM COUNTY—Vickers & Phillips' Hutton 1, ne ne se 29-8s-22w, dr 3715 ft.

GREENWOOD COUNTY—McGinnis' Lampe 1, nw ne sw 26-24s-8e, sd 1407 ft. Guy Scott et al's Pedroja 1, se ne se 6-26s-10e, dr 520 ft.

HARPER COUNTY—Marathon Oil Co.'s Zellers 1, csw nw 17-35s-8w, dr 5286 ft.

HARVEY COUNTY—Harburney Oil Co.'s Scrag 1, nw nw se 24-22s-3w, sd 2907 ft. Shawver's Judd 1, sw se ne 3-24s-2e, sd 2215 ft. Phillips Pet. Co.'s Kaufman 1, ne ne nw 2-22s-2w, dr 2425 ft.

HASKELL COUNTY—Kuhn Bros. et al's Nilson 1, sw sw se 21-28s-32w, td 2409 ft, rust. Helmerich & Payne et al's Jones 1, cse 24-26s-34w, dr 2000 ft.

KINGMAN COUNTY—Lauck et al's Prather 1, cse 18-27s-8w, dr 4460 ft. Oklahoma Oil Corp. et al's Reeves 1, nw nw nw 29-27s-5w, co 4150 ft. McBride's Wooldridge 1-A, sw ne se 16-27s-7w, rig.

McPHERSON COUNTY—Empire's Cunningham 1, se se se 26-18s-1w, td 2840 ft, wocs. Johnson et al's Johnson 1, sw sw nw 33-17s-1w, dr 3025 ft.

MEADE COUNTY—Pacific Midwest Co.'s Rexford 1, ne se sw 8-30s-29w, mim.

NESS COUNTY—Newton Dev. Co.'s Tenny 1, nw nw se 19-18s-25w, dr 475 ft. Continental Oil Co.'s Thompson 1, ce½ e½ sw 13-18s-26w, resumed dr 4505 ft, 3400 ft oil, no test.

PAWNEE COUNTY—Kessler & Their et al's Gustafson 1, sw sw sw 27-20s-16w, rur.

RENO COUNTY—Rosespring et al's Swanson 1, ne ne nw 1-23s-5w, dr 3655 ft. Dickey Oil Co.'s Shepherd 1-A, ne ne nw 22-26s-9w, dr 4325 ft. Miller et al's Detter 1, ne se nw 28-22s-7w, rng 12-in csg 590 ft. Pryor & Lockhart et al's Kerr 1, cnw 23-23s-8w, ru. Foraker et al's Hiett 1, se sw ne 34-24s-4w, sd 3190 ft. Continental & Wentz's Snook 1, ne nw sw 10-22s-8w, lcn.

RICE COUNTY—Gilmac Oil Co.'s Sargent 1, se se se 31-18s-6w, co 3170 ft. Simpson & Noble et al's Pulliam 1, cs½ n½ ne 35-19s-8w, td 3252 ft, 45 mil ft gas, comp. Beardmore et al's Fuller 1, sw sw se 23-18s-7w, sd 3350 ft. Simpson-Noble & Stanolind's Bowman 1, sw sw nw 22-19s-10w, dr cement. Shell's Maughlin 1, ne nw se 11-20s-8w, prep to dd. Shell Pet.'s Gordon 1, cw½ w½ ne 21-21s-10w, br. Sage et al's Patton 1, sw sw sw 5-21s-7w, fsg 118 ft.

ROOKS COUNTY—Murfin et al's Westhusin 1, ne ne se 12-6s-18w, co 3550 ft. Skaer Oil Corp. & Reese's Dryden 1, ne ne ne 28-10s-17w, dr 3277 ft. Lester & Dean's Burtt 1, se se ne 29-10s-20w, rng 8-in csg 2714 ft. Shoemake's Stebbins 1, ne ne sw 26-7s-17w, dr 2095 ft. Helmerich & Payne's Bedard 1, cne 29-9s-19w, td 3530 ft, rust. L. C. D. Drlg. Co.'s Westhusin 1, cne se 11-9n-17w, dr 538 ft. Hartman & Blair et al's Hall 1, nw nw nw 25-10s-17w, dr 1331 ft. Buckner & Schaff's McConnett 1, ne ne ne 34-6s-18w, pits.

RUSH COUNTY—Pryor & Lockhart's Stegman 1, sw nw ne 11-16s-17w, td 3550 ft, d & a. Boyle & Grossman's Wilson 1, ne ne ne 33-17s-19w, ur 6-in csg 3617 ft.

RUSSELL COUNTY — Wakefield et al's Krug 1, ne nw sw 7-15s-14w, td 3285 ft, d & a. Hartman & Blair's Johnston 1, nw nw nw 11-13s-14w, sd 2023 ft. Lario O. & G. Co. et al's Steinert 1, nw nw sw 21-15s-15w, dr 2586 ft. Hartman & Blair's McAllister 1, sw sw se 24-13s-15w, rng 5-in liner 3295 ft. Armer et al's Maier 1, ne nw ne 20-15s-14w, dr 1220 ft. Central Pet. Corp.'s Benso "C" 1, se se sw 9-14s-15w, pb 3120 ft, pulled 5-in csg, pot 292 bbls oil, comp. Lee & Reser's Penix 1, sw sw se 13-14s-13w, sd 420 ft.

SALINE COUNTY—Ryan Consolidated & Archer's Norton 1, ne ne ne 30-14s-2w, ru.

SEDGWICK COUNTY—Wakefield et al's Howard 1, se se ne 25-25s-2e, rig. Lauck's McLean 1, csw se 1-27s-1w, br.

STAFFORD COUNTY—Lebow et al's Wolf 1, se sw nw 3-21s-12w, woc at 228 ft. I. T. I. O. Co.'s Mellies 1, cn½ n½ ne 6-22s-11w, mim.

SUMNER COUNTY—Matthews & Derrington's Berry 1, nw nw se 14-25s-1e, dr 3690 ft. Wilson et al's Clark 1, csl nw 15-35s-1w, sd 4430 ft. Craft & Wilson's Nevitt 1, ne nw ne 36-32s-2e, dr 3529 ft. The Texas Co.'s Reed 1, ne se se 11-31s-1w, td 3051 ft, rust.

TREGO COUNTY — Central Commercial's Wagg 1, nw nw se 17-13s-21w, co 4505 ft. Hall et al's Deines 1, se se se 12-13s-24w, dr 2120 ft.

WOODSON COUNTY—Lewis et al's Riggs 1, sw sw sw 10-26s-14e, sd 1115 ft.

MONTANA

DANIELS COUNTY—Whitetail Oil & Gas Co. 1, nw ne nw 10-36n-50e, dr 2500 ft.

FERGUS COUNTY—Judith Operating Co., Government 2, w nw ne 35-22n-17e, dr 2050 ft. Canmont Exploration Co., Ltd. 1, se ne ne 6-21n-18e, lcn. H. C. Rowland Government 3, cel ne sw 18-17n-24e, dr 850 ft.

JUDITH BASIN COUNTY—Fletcher P. Hunt Hobson 3, nw se ne 30-14n-15e, dr 900 ft.

PONDERA COUNTY—Nordon Corp., Hollan 1, nw nw nw 12-28n-6w, sd 2200 ft.; Gordon Campbell Hughes 1, nw ne nw 12-20n-4w, dr 3001 ft.

TOOLE COUNTY—Boyd Kyle Wolsti, cse se 3-33n-1w, dr 1300 ft.

MICHIGAN

ARENAC COUNTY—Tamblyn & Martindale's Buffalo Land 1, 19n-3e-7, sp.

ALPENA COUNTY—C. W. Teater's Nevins 1, 32n-6e-18, dr 1600 ft.

CLINTON COUNTY—H. E. Bell's Arthur 1, nw sw nw, 6n-1w-29, rig. J. T. Norris Tr.'s Harris 1, nw ne sw, 7n-2w-14, lcn. Pet. Exploration's Cable 1, 5n-2w-12, fsg 2965 ft.

GLADWIN COUNTY—Goll, Graves, Mechling's Oard 1, 18n-1w-25, dr 3200 ft; State 1, 19n-2e-30, sd 1300 ft.

GRATIOT COUNTY—Herbert Snell's Smead 1, sw sw se, 11n-4w-20, dr 400 ft. Associated Petroleum Co.'s Yutzey 1, 10n-4w-26, dr 1800 ft. McPherson Co.'s State Bank 1, 9n-1w-11, rig. Harley Williams' Smith 1, 9n-2w-29, sd 2800 ft. Oil Finders Inc.'s Stahl 1, 11n-2w-28, csg 6-in 1251 ft. Red Man Oil Co.'s Duckworth

SEE PAGE 49

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1, ne ne sw, 11n-3w-9, lcn. R. L. Stoddard's Soule 1, sw se sw, 11n-2w-9, sp.

IONIA COUNTY—Terry Dale Inc.'s Tew 1, 6n-7w-12, dr 3500 ft br shale & lime. J. H. Barton's Mosser 1, ne ne nw, 6n-5w-19, rig.

INGHAM COUNTY — National Minerals' Smith 1, nw nw se, 4n-1w-9, rig.

KENT COUNTY—J. S. Barton's Smith 1, 10n-10w-29, sd 3000 ft. Mich. Oil Exploration's Croff 1, 7n-9w-35, dr 3800 ft.

LAKE COUNTY—C. W. Teater's McCabe 1, 20n-12w-26, dr 3190 ft.

MASON COUNTY — Sylvania Oil Co.'s Campbell 1, 17n-15w-10, dr 2000 ft.

MANISTEE COUNTY—Red Wing Dev.'s Bolema 1, 21n-15w-15, dr 1700 ft.

MECOSTA COUNTY—Hall Be Oyle Co.'s Sears 1, 13n-8w-9, dr 1600 ft. Daily Crude Oil Co.'s Hoffman 1, 16n-7w-9, fsg 269 ft, 14-in csg collapsed. W. J. Bernier's Fitzgerald 1, 13n-9w-9, dr 2000 ft. Frank V. McCollister's Joass 1, 15n-10w-8, dr 1500 ft.

MIDLAND COUNTY—B. A. Bartlett's Siebert 1, nw sw se, 15n-2e-33, dr 100 ft.

MONTCALM COUNTY—R. E. Gallagher's Bentley 1, 11n-7w-33, dr 3000 ft. K. B. Montigel's Loree 1, 9n-5w-18, dr 1400 ft. W. E. Voss Tr.'s Vristol 1, 10n-8w-23, csg 5-in 2950 ft.

OTSEGO COUNTY—Harley Williams' Hanson & Raae 1, se se se, 30n-1w-15, lcn.

TUSCOLA COUNTY—Co Op Oil Co.'s Forsyth 1, se sw se, 10n-7e-36, lcn. V. R. Kirkham's Boyce Farm 1, 14n-7e-24, test, pb 2893 to 2845 ft, acidized.

MISSISSIPPI

CLAIBORNE COUNTY—Claiborne O. & G. Drlg. Co.'s Crawford 1, 6-13n-4e, elev 115 ft, dr 970 ft sandy shale & lime. Claiborne County Dev. Co.'s Ruth Hayden 1, 56-11n-2e, lcn.

GRENADA COUNTY—H. T. Salter et al's Carpenter 1, 5-21n-7e, dk & mir.

HINDS COUNTY—Chichester et al's Gervin 1, 11-5n-4w, lcn.

JONES COUNTY—Snow-Black Pet. Co.'s Fox 2, 31-7n-12w, arr deepen 3905 ft.

MONROE COUNTY—P. J. McAlpine et al's Crook 1, 4-13n-18e, owdd, td 2537 ft.

SIMPSON COUNTY—Goodwill O. & G. Co.'s Berry 1, 33-2n-4e, lcn.

SMITH COUNTY—Howie & Lewis' Broadfoot 1, 15-4n-7e, dr 1720 ft.

WILKINSON COUNTY—T. S. Stoneman et al's L. T. Ventress 1, 38-2n-3w, lcn.

NEW MEXICO

LEA COUNTY—Argo Royalty Co.'s Lanehart 1, sw se ne 21-25s-37e, mim. Barney Cockburn & Rowan-Nichols Oil Co.'s H. G. Mattern 1, c sw se 7-22s-37e, elev 3426 ft, used 1000 gals acid at 3727 ft, flowed 6 bbls fluid per hr, 50 percent oil and balance sul water. C. & G. Oil Co.-The Texas Co.'s Ellen Weir 1, c ne ne 14-20s-37e, elev 3564 ft, top anhydrite 1348 ft, swabbed 45 bbls oil daily after using 2000 gals acid in Hobbs lime pay at 4075 ft, with packer at 4063 ft, excluding water above. Culberson, Erwin & Stovall's J. S. Eaves 1, c sw nw 18-21s-33e, dr 1360 ft. Gulf Oil Corp.'s L. M. Buffington 1, c nw sw 13-25s-37e, elev 3091 ft, tested 9,048,000 ft gas at 3063 ft, sdo; S. J. Carr 1, c nw sw 3-24s-37e, elev 3267 ft, dr 3220 ft; F. C. King 1, c sw nw 5-23s-37e, elev 3371 ft, dr 3310 ft; W. T. McCormack 1, c ne ne 32-21s-37e, elev 3464 ft, flowed 87 bbls oil 12 hrs, completed after nitro shot and three acid treatments at 3695-3802 ft; A. B. Reeves 1, c nw sw 29-20s-37e, elev 3529 ft, pb fr sul w 3859 ft to 3846 ft, complete flows 80 bbls daily on gas lift after shot and acid; J. A. Stuart 1, c sw ne 10-25s-37e, elev 3120 ft, flowed 126 bbls oil and 2,800,000 ft gas via tubing, td 3431 ft, testing. Humble O&R Co.'s B. E. Boyd 1, c nw se 35-22s-37e, dr 500 ft; W. B. Farrell 1, c sw se 22-22s-37e, elev 3341 ft, td 3705 ft, shot 200 qts nitro 3600-84 ft, showed water, pb to 3604 ft, testing. Jal Nat'l Gas Co.'s C. T. Bates-Humble 1, c nw sw 20-25s-37e, elev 3049 ft, dr 615 ft. Landreth Prod. Corp.'s E. H. Grizzell 1, c se sw 5-22s-37e, elev 3437 ft, td 3620 ft, showing oil, cem cas 3575 ft. Harry W. Leonard et al's B. T. Lanehart 2, c se nw 21-25s-37e, elev 3067 ft, dr 1300 ft. Magnolia's E. A. Carson 1, c nw sw 28-21s-37e, elev 3463 ft, top salt 1348 ft, top lime 2700 ft, cem 7-in cas, td 3622 ft; Will Cary 1, c ne se 21-22s-37e, elev 3361 ft, top anhydrite 1108 ft, flows 50 bbls daily, co after shot, td 3550 ft; Scharbauer-Eidson 1, c nw ne 29-16s-35e, mim.. N. G. Penrose & Rowan-Nichols Oil Co.'s Will Cary-Humble 3, c se nw 22-22s-37e, elev 3364 ft, sd 1150 ft; Cary 4, c sw nw 22-22s-37e, dr 1200 ft. Plains Production Co.'s R. L. Mosley-Repollo 1, c nw se 34-24s-37e, elev 3168 ft, sul w at 3550-51 ft, pb to 3530 ft, completed, flows 95 bbls daily via 1/16-in choke, with 2,000,000 ft gas; J. A. E. Knight 1, c ne se 21-24s-37e, sp. & sd; Knight 2, c ne sw 14-24s-37e, mim; Williams 1, c sw

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ne 34-24s-37e, rust. Repollo Oil Co.'s Frances Stuart 1, se nw se 10-25s-37e, elev 3114 ft, cem 7-in cas 2885 ft; J. M. Brownlee 1, ne ne sw 25-21s-36e, lcn. Samedan Oil Corp.'s Marshall 1, c sw nw 12-21s-36e, elev 3540 ft, used 2000 gals and 5000 gals of acid at 3861 ft, swabbed 5 bbls oil per hr, sd for shot; C. U. Parks 1, sw sw sw 14-22s-37e, elev 3339 ft, sul w 3780-90 ft, pb fr 3800 ft to 3610 ft, shot 245 qts 3502-3610 ft, completed, flowed 69 bbls oil 16 hrs via tub; S. B. Hughes 1, c ne sw 4-23s-37e, lcn. Skelly Oil Co.'s J. V. Baker 2, c nw nw 27-22s-37e, elev 3341 ft, dr 3270 ft; Ellen Sims 1, c nw se 3-22s-37e, elev 3300 ft, rust, td 3375 ft; F. S. Stuart 1, c ne nw 15-25s-37e, elev 3107 ft, running cas, td 3150 ft. Sun Oil Co.'s B. T. Lanehart 1, c se se 20-25s-37e, elev 3042 ft, top anhydrite 971 ft top salt 1145 ft, fsh tubing, td 2757 ft. The Texas Co.'s L. L. Clardy 1, c sw se 13-16s-36e, mim; E. D. Fanning 1, c se ne 4-24s-37e, elev 3293 ft, dr 2980 ft. Tide Water Oil Co.'s Anna Walden 1, c se ne 21-22s-37e, elev 3352 ft, td 3620 ft, shot 260 qts at 3490-3598 ft, flowed 127 bbls oil 12 hrs, and 45 bbls next 12 hrs, co and testing.

OKLAHOMA

ATOKA COUNTY—Prairie Investment Co.'s Cobb 1, sw ne nw 19-3s-11e, sd 472 ft. Phelps & Coats et al's Fidelity 1, se sw nw 23-1s-12e, sd 750 ft.

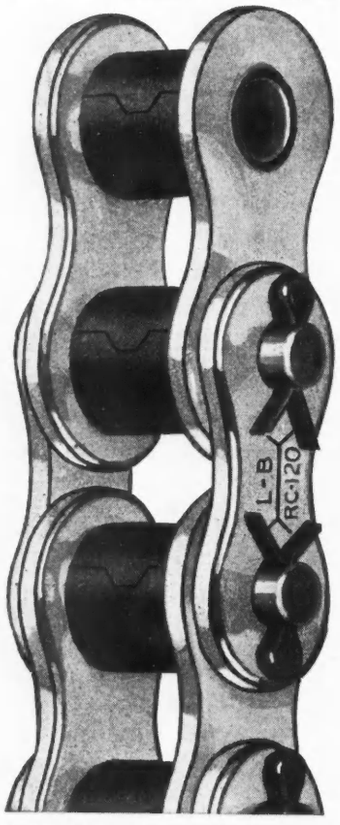
BECKHAM COUNTY—Jo-Gail Drlg. Co.'s Gilliland 1, cne ne 3-8s-26w, ru & sd.

CARTER COUNTY—Carter Oil Co. et al's Leon Voorhees 1, cse sw 34-5s-2w, sd 7040 ft. Hammond's Lile 1, sw se se 8-5s-1e, sd 475 ft.

COAL COUNTY—Shell Pet. Corp.'s Hill 3, se se nw 30-3n-10e, bailing sw. Sinclair Prairie's Culver 1, ne ne sw 16-1n-8e, dr 1938 ft. Mitchell's Quiett 1, ne nw sw 35-1n-8e, sd 1900 ft. Carter & Magnolia's James 1, sw nw sw 35-1s-8e, dr 2115 ft. Continental's King 1, ne sw ne 26-1n-8e, dr 860 ft.

GARFIELD COUNTY—Sherry et al's Hoken 1, nw nw sw 32-20n-4w, td 7035 ft, d & a. Stanolind-Amerada's Brunken 1, sw sw ne 32-23n-4w, dr 6148 ft.

GARVIN COUNTY—Carter et al's Wood 1, nw sw se 5-4n-3e, td 3018 ft, bailing fluid.



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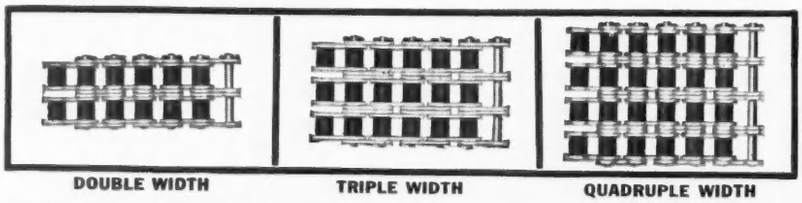

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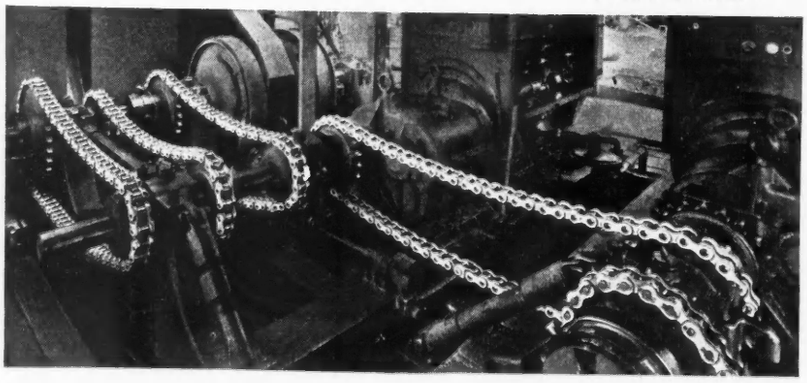

McElreath & Suggett's Lasater 1, se se sw 2-2n-1w, dr 4283 ft. Luttrell et al's Howell 1, nw se nw 34-1n-1e, dr 70 ft.

GRADY COUNTY—Art Holt et al's Ramsey 1, ne se ne 31-5n-8w, rig. Graham et al's Castleberry 1, sw se nw 8-5n-7w, dr 40 ft.

HUGHES COUNTY—Phillips Pet. Co.'s Eberle 1, ne ne sw 12-5n-9e, co 5540 ft. Sivils et al's Montgomery 1, nw sw nw 7-9n-9e, fsg 3498 ft. Blackwell O. & G. Co.'s Long 1, se ne nw 29-9n-9e, rng 10-in csg 1700 ft. Sinclair Prairie et al's Wilkey 1, sw sw sw 23-9n-8e, sd 3025 ft. Blackwell O. & G. et al's Homahte 1, sw ne ne 1-9n-10e, rur.

JACKSON COUNTY—Burnham's Oliver 1, nw nw se 26-1n-20w, fsg 2085 ft. Ben Russell's Danial 1, nw ne se 13-3n-20w, dr 1050 ft. Jackman's Fee 1, sw sw sw 27-1s-24w, woc at 2685 ft. Delaney's Mock 1, cne sw 32-1n-20w, dr 1450 ft.

JEFFERSON COUNTY—Pearson et al's Douthitt 1, ne ne ne 24-6s-9w, sd 2202 ft.

JOHNSTON COUNTY—Shell Pet. Corp.'s Illinois Bankers Life 1, nw se ne 10-2s-7e, dr 715 ft.

KAY COUNTY—Allen & Texas Co.'s Fulton 1, se se se 18-27n-4e, rng 10-in csg 1675 ft.

KIOWA COUNTY—Beeler & Klein's Parrish 1, se se nw 3-6n-15w, co 290 ft.

LINCOLN COUNTY—Amerada et al's Zimmerman 1, sw sw ne 10-12n-5e, bailing oil & water 4358 ft. Mid-Continent's Hillman 1, sw se ne 29-13n-6e, dr 4065 ft. Skelly's Sporn 1, nw ne sw 21-17n-3e, dr 1750 ft. Kemp & Continental's Lobaus 1, nw sw nw 21-17n-5e, rig.

LOVE COUNTY — Amerada - Stanolind's Westheimer & Daube 1, sw se sw 27-6s-2e, td 7363 ft, pb 2970 ft, testing. Sinclair Prairie's Stockton 1, se se sw 26-6s-2w, testing. Riddle et al's Johnson 1, csw se 20-8s-2w, rig. Russell et al's Scott 1, sw se sw 27-8s-2e, td 4968 ft, d & a.

MARSHALL COUNTY—Helmerich & Payne's Taliaferro 1, nw se sw 26-5s-5e, dr 2182 ft. Sherril & Rounds' Taylor 1, sw ne ne 30-7s-7e, spd.

McINTOSH COUNTY—Dieckman's McIntosh 1, se se se 4-12n-17e, dr 905 ft.

NOBLE COUNTY — Stanolind - Amerada's Gillham 1, ne se se 14-22n-1e, dr 2760 ft.

OKLAHOMA COUNTY — O'Shaughnesey Inc.'s Berlowitz 1, se sw ne 9-12n-3w, dr 5375 ft.

OSAGE COUNTY—Gray & Tolson's 1, sw sw ne 33-25n-7e, dr 2902 ft. Stoner & Miller's 1, nw ne sw 18-22n-8e, dr 1170 ft.

PAYNE COUNTY — Amerada - Stanolind's Pratt 1, se se se 29-19n-5e, fsg 3685 ft.

PITTSBURGH COUNTY—Oklahoma Dist. Oil Co.'s Beeler 1, ne ne sw 7-7n-14e, dr 147 ft.

PONTOTOC COUNTY—Selby O. & G. Co.'s Sands 1, ne ne ne 20-3n-5e, td 1907 ft, d & a.

SEMINOLE COUNTY—Tom Phillips & Kimraw Drlg. Co.'s Chemperney 1, se se nw 7-6n-7e, dr 3630 ft. Twin States' Hamm 1, sw se sw 24-10n-7e, woc at 3552 ft. Crosbie's Casey 1, cn½ n½ ne 30-6n-8e, dr 2708 ft. Arkansas Royalty Co.'s Kiker 1, se se ne 9-10n-7e, fsg 3150 ft. Deaner & Tilley et al's Wilson 1, se sw sw 29-7n-6e, dr 2435 ft. Rudco O. & G. Co.'s Butner 1-A, ne ne sw 15-9n-8e, dr 900 ft. Kennedy's Bowlegs 1, nw nw se 3-8n-7e, lcn.

STEPHENS COUNTY—Endicott et al's McFatridge 1, nw nw sw 11-3s-9w, sd 1452 ft. Ed Parson's Olson 1, csw sw 21-2n-8w, rig. McCasland's Parker 1, ne ne sw 2-1n-6w, td 2518 ft, d & a.

TILLMAN COUNTY—Gulf Oil Corp.'s Wearmouth 1, se nw se 31-1s-16w, dr 4952 ft. Johnson, Young & Mitchell's Donahoe 1, se nw nw 7-4s-17w, sd 2640 ft. Gulf Oil Corp. et al's McWilliams 1, nw sw sw 15-3s-17w, dr 3950 ft. Bernheim's Tate 1, ne ne nw 16-1s-19w, co 1771 ft. Shirley Clumm et al's Moriele 1, nw nw se 16-4s-14w, sd 1331 ft. Smith's Hammill 1-A, ne nw nw 6-5s-15w, sd 1985 ft. Eugene Skinner's Rilling 1, se se nw 22-1s-15w, spd.

EAST TEXAS

ANDERSON COUNTY—Gulf Oil Corp.'s M. J. Ross 1 (54.7-ac), Robt. Erwin sur, Camp Hill area, elev 487 ft, top Georgetown lime 5452 ft, dr Fredericksburg lime and shale 6575 ft. Tide Water & Seaboard Oil Corp.'s J. B. Edens 15 (988.6-ac), Samuel Snider sur, Cayuga field, Trinity sand test, elev 313 ft, Pecan chalk 2245-2410 ft, Austin chalk 3161-3498 ft, top Woodbine series 3880 ft, top Georgetown lime 4619 ft, cem 9⅝-in csg 4686 ft, td 4695 ft.

BOWIE COUNTY—Westmount Oil Co. et al's R. H. Phillips 1 (115-ac), J. N. Hancock sur, 10 mi n Oak Grove, elev 340 ft, Georgetown lime 1533-1924 ft, top Paluxy sand 1924 ft, 1st stringer anhydrite 2735 ft to 2890 ft, d & a 4004 ft. Fay T. Chew & Brassett's Byron Barkinson 1 (90-ac), J. W. Parkman sur, 2½ mi n of Leary, sp & sd. Ferguson & Hill's A. Y. Breckenridge 1, Nancy Dycas sur, 4 mi w Texarkana, sp & sd.

CHEROKEE COUNTY—T. J. Wood et al's J. E. Huggins 1 (80-ac), Levi Jordan sur, 2 mi sw Rusk pool, elev 457 ft, Pecan chalk

4039-4480 ft, Austin chalk 4935-5181 ft, top Woodbine pay 5182-5186 ft, completed, flows 12 bbls fluid per hr, 70 percent salt water via 3/16-in tubing choke.

COLLIN COUNTY—Port Bolivar O. & R. Co.'s O. G. Durning-Clarkston 1-A (140-ac), Wm. Creager sur, Pat. 1193, elev 722 ft, sd 4096 ft; A. Shirley 1 (50-ac), Gwynn Morrison sur, 1 mi e Anna, mim.

DELTA COUNTY—Delta Oil Co. Inc.'s J. H. McKinney 1 (231-ac), L. Hampton sur, lcn.

FALLS COUNTY—J. Edward Mills et al's Sam Grucholski 1 (40-ac), Dennis Herold league, 5 mi sw Kosse, elev 521 (est.) ft, top Pecan chalk 2114 ft, Austin chalk 2765-2946 ft, dr Eagle Ford shale 3080 ft.

FANNIN COUNTY—E. V. Abernathy & A. F. Carter's G. D. Galloway 1 (320-ac), W. M. Rice sur, top Georgetown lime 1697 ft, sd 2258 ft. L. P. Kean et al's R. L. & W. M. Kelley 1 (160-ac), Wm. Kelley sur, top Georgetown lime 2610 ft, sd 2880 ft.

FRANKLIN COUNTY—Humble O. & R. Co.'s A. P. King-Hughes 2 (1053.36-ac), O. James sur, running csg, td 4139 ft. Earl Bateman Drlg. Co.-Al Ravenger's E. L. Phillips 1 (38½-ac), Wm. Bridwell sur, elev 358 ft, Pecan chalk 1342-1580 ft, top Georgetown lime 3510 ft, top Paluxy sand 4287 ft, tested sw in water sand 4357-4361 ft, pb to 4343 ft, cemented 5½-in csg 4284 ft, tested hole full oil. Lucey Pet. Co. et al's W. N. Crawford 1 (25-ac), O. James sur, elev 368 ft, Pecan chalk 1595-1778 ft, dr lime 3800 ft. J. B. Bond and J. Z. Werby's T. J. Sanders 1 (42.3-ac), W. F. Dyer sur, elev 359 ft, Pecan chalk 1262-1300 ft, top Woodbine 2888 ft, top Red Beds 3005 ft, top Georgetown lime 3424 ft, Paluxy series 4198-4344 ft, set csg 4190 ft, tested 700 ft oil and 3500 ft salt water, sdo. Magnolia-Humble's C. L. Owings 1 (160-ac), McKinney-Williams sur, rig. Joe DeGrazier et al's F. M. Batts 1 (30-ac), F. M. Batts sur, elev 356 ft, dr 1500 ft. McAlester Fuel Co.'s A. M. Crawford 2 (25.23-ac), O. James sur, Pecan chalk 1600-1760 ft, dr lime 3700 ft. L. S. Flannery Inc. & Stroube's J. L. Hedrick 1 (66.08-ac), MEP&P Ry sur, Pecan chalk 1255-1317 ft, dr 3800 ft. Stroube & Stroube's B. Norman 1, MEP&P Ry sur 344, dk.

GRAYSON COUNTY—Olson Drl. Co.-James H. Gardner et al's SW Life 1 (160-ac), J. C. Jamison sur A-863, 3 mi n Pottsboro, elev 767 ft, top Sylvan shale 4870 ft, Viola lime 4901-5056 ft, td 5890 ft, pb to 5400 ft, fsh drill pipe. Port Bolivar O. & R. Co.'s Creed Taylor 1 (160-ac), J. Fitzhugh sur, 3 mi se Gunter, sd 4048 ft.

FREESTONE COUNTY—Tom Sharp & Paul Gunther's E. E. Lamb (95-ac) 1, Jas. Sparks sur, 3 mi se Fairfield, top Austin (soft) chalk 2550 ft, hard chalk 2582-3024 ft, top Woodbine series 3340 ft, tested sw 3374-78 ft, will dd to 3500 ft and abd.

HOPKINS COUNTY—Dilworth S. Hager, W. P. Luse & Leon Russ' J. E. Worsham 1 (150-ac), A. O. Wetmore sur, elev 440 ft, Pecan chalk 1187-1208 ft, top Woodbine 3040 ft, top Georgetown lime 3600 ft, Paluxy series 4465-4500 ft, probably 20 ft good oil, saturation, sd for csg.

HUNT COUNTY—Texola Land Corp.'s Gen. American Life Ins. Co. 1 (203.8-ac), blk 104, J. Yeary sur, lcn.

HOUSTON COUNTY—Branch et al's P. S. Griffiths 1, Frank Johnson sur, 3 mi sw Crockett, dk. Walter L. Goldston & Humble's B. W. Burns 1 (50-ac), J. de la Reviere sur, rig. Ellison, McBride, Haberle & Thornton's J. E. Bean 1 (40-ac), Eli Steadman sur, 1½ mi nw Grapeland, elev 482 ft, Pecan chalk 4660-4894 ft, Austin chalk 5610-5961 ft, top Woodbine 6027 ft, td 6040 ft, tested 60,000,000 ft wet gas, sd for casing.

KAUFMAN COUNTY—Colton & R. P. Lester's Barrow Bros. 1 (40-ac), J. D. Taylor sur, 8 mi ne Elmo, Trinity sand test, elev 528 ft. Austin chalk 2235-2681 ft, crooked hole, td 3720 ft. J. M. Scott & J. B. Woodside's E. Robinson 1 (80-ac), A. Chirnio sur, 2 mi w Scurry, elev 406 ft, top Austin chalk 1200-1747 ft, top Woodbine series 2158 ft, top Red Beds 2230 ft, d & a 2510 ft.

LAMAR COUNTY—J. S. Abercrombie Co.-Harrison Oil Co.'s C. M. Terrell 1 (220-ac), Abner Hill sur, 4½ mi se Paris, rig. J. A. Forester et al's J. S. Woodward 1 (18¾-ac), J. W. Woodward sur, 1½ mi e by s of Minter, elev 402 ft, top Georgetown lime 2256 ft, Paluxy sand 3060-3144 ft, top anhydrite 3735 ft, base hard anhydrite 4075 ft, broken to 4105 ft, sd 4516 ft.

LIMESTONE COUNTY—Dan H. Daugherty et al's Sallie Welch 1 (94-ac), Pedro Varella sur, 4 mi w Groesbeck, Austin chalk 2350-2650 ft, top Woodbine series 2890 ft, tested dry, sdo 3158 ft. C. F. Lytle et al's I. L. Thompson 1-T (141-ac), w side Mexia field, elev 459 ft, cem 7-in csg 6002 ft, td 6065 ft, tested salt water flow with gas, pb to 6059 ft, sdo.

NAVARRO COUNTY—W. A. Reiter et al's J. V. Bounds 1 (180-ac), H. Shelton sur, lcn.

RED RIVER COUNTY—J. S. Abercrombie Co.-Harrison Oil Co.'s Southern Pine Lumber Co. 1-A (392.57-ac), D. D. Bruton sur, 12 mi ne Clarksville, elev 407 ft, Georgetown lime 665-1020 ft, top Paluxy 1057 ft, anhydrite 1740-1800 ft, top sand with good oil saturation 2104 ft, tested sw at 2110 ft and 2118 ft, fsh d p in lower Trinity series at 2292 ft. R. H. Manning & Texfornia Co.'s Hocker-Hughes 1 (80-ac), MEP&P Ry sur 642, 6 mi sw Lydia, elev 307 ft, Nacatoch sand 424-460 ft, sd 850 ft.

RUSK COUNTY—Pure Oil Co.'s W. H. Faulkner 1 (60-ac), Wm. Elliott sur, 5 mi e Mount Enterprise, Trinity sand, or 8500-ft test, elev 563 ft, Pecan chalk 2650-2890 ft, show gas when cut through fault at 2599-2609 ft, Austin chalk 3286-3450 ft, top Georgetown lime 3446 ft, stringer anhydrite 5320-5325 ft, top massive anhydrite 5945 ft, tested sw at 6177-6298 ft, top Travis Peak 7323 ft, dr 7450 ft, with odor oil in cuttings.

TITUS COUNTY—Jule Alford Tr. et al's J. E. Fry 2 (47.48-ac), I. P. Stern sur, about 1200 ft ne Fry 1, jkd test, elev 333 ft, Pecan chalk 1390-1452 ft, Austin chalk 3050-3082 ft, top Georgetown lime 3610 ft, top Paluxy 4328 ft, water sand 4341-4346 ft, d & a. L. L. Deaton et al's W. H. Gray 1, lot 7, blk 17, Talco townsite, rig. Delta Drl. Co.'s Cato 1, c blk 44, Talco townsite, dr 3000 ft. Hollandsworth Drl. Co.'s A. O. Brown 1 (52/100-ac), c lot 1, blk 41, Talco townsite, elev 377 ft, top Pecan chalk 1666 ft, top Georgetown lime 3392 ft, Paluxy pay 4170-4347 ft, complete, flowed 40 bbls per hr via tubing with packer installed. Humble O. & R. Co.-Ned B. Morris Jr.'s W. H. Hughes 1 (6½-ac), Delgado sur, elev 371 ft, Pecan chalk 1630-1787 ft, Paluxy series 4160-4351 ft, completed, flowing 16 bbls per hr via tubing. Humble's N. B. Davis 1 (96-ac), I. P. Stern sur, dk; L. Stevenson 1 (100-ac), I. P. Stern sur, rig. R. C. Horne et al's J. F. & L. Barton 1 (3-ac), M. V. Delgado sur, elev 361 ft, Pecan chalk 1550-1755 ft, top Georgetown lime 3386 ft, dr 4200 ft. Jones & Shelburne's Hazelwood 1 (10-ac), I. P. Stern sur, elev 342 ft, Pecan chalk 1320-1520 ft, top Red Beds 3238 ft, top Georgetown lime 3511 ft, Paluxy pay 4285-4351 ft, tested salt water with little oil, pb to test; L. Stevenson 7 (71.9-ac), O. James sur, dk. W. P. Luse et al's W. T. Sulli-

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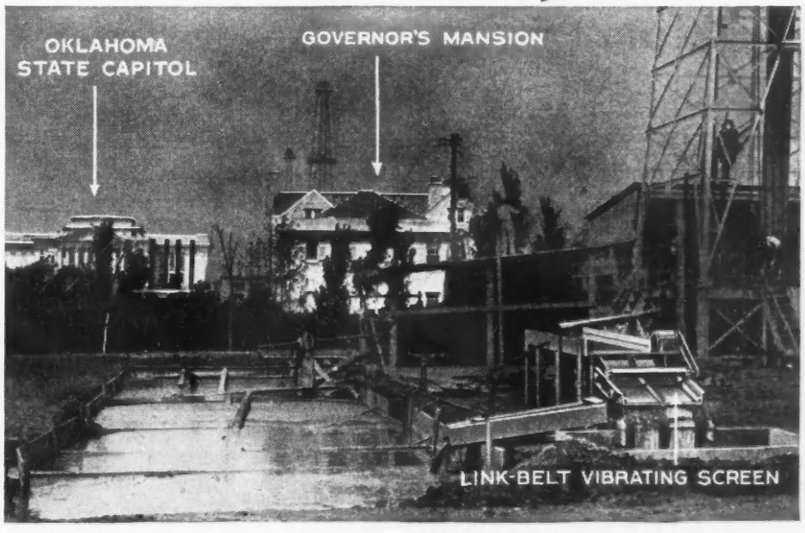

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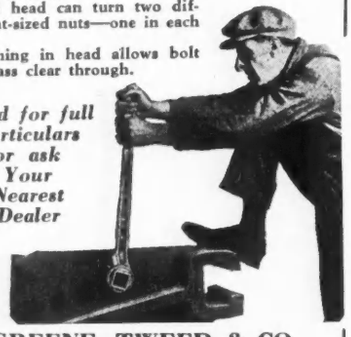

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van 1 (4-ac), M. V. Delgado sur, elev 371 ft, Pecan chalk 1635-1828 ft, top Georgetown lime 3440 ft, jkd at 3748 ft, skid rig 24 ft to east; Sullivan 1-A, dr 4000 ft. Magnolia Pet. Co.-Humble's Lucy Blackburn 1 (80.51-ac), Ben Jones sur, dr 3200 ft. B. C. Morrison, A. M. Peairs et al's Lewis Sanders 1, c lot 1, blk 30, Talco townsite, elev 371 ft, Pecan chalk 1670-1860 ft, top Georgetown lime 3330 ft, Paluxy series 4188-4350 ft, completed, flowed 25 bbls per hr via tubing. J. W. Osteen et al's W. DuBose 1 (1-ac), M. V. Delgado sur, dr 2000 ft. Paluxy Oil Corp.'s U. Shaw 1 (2.85-ac), Talco townsite, dr 1500 ft. J. I. Roberts Drl. Co.'s T. A. Simms 1, Talco townsite, dk. Nivla Oil Corp.-Sutton & Hawkins' J. N. Kelley 1, ne c 15.76-ac lse, J. Salmon sur A-506, elev 348 ft, Pecan chalk 1533-1730 ft, top Red Beds 3181 ft, top Georgetown lime 3640 ft, top Paluxy pay 4228-4360 ft, rust with 2000 ft oih; W. H. Gray 1 (2-ac), blk 10, Talco townsite, elev 362 ft, Pecan chalk 1635-1786 ft, dr 2000 ft. Porter Bros. et al's W. T. Sullivan 1 (4-ac), I. P. Stern sur, dr 4000 ft. Red Iron Drl. Co.-Dean Bros.' A. Cornelius 1 (3-ac), M. V. Delgado sur, elev 370 ft, Pecan chalk 1641-1875 ft, top Georgetown lime 3490 ft, testing 4251 ft. G. Stratton et al's J. F. Barton 1 (1-ac), M. V. Delgado sur, s of Talco, Pecan chalk 1563-1746 ft, top Red Beds 3235 ft, top Georgetown lime 3384 ft, dr 3900 ft. Stroube & Stroube's S. E. Stratton 1 (50-ac), MEP&P Ry sur, 6 mi e Talco, elev 341 ft, Pecan chalk 1711-1880 ft, dr Fredericksburg shaley-lime 4350 ft.

TEXAS GULF COAST

AUSTIN COUNTY—W. H. Mitchell's Fenner 1, s of Kenney, J. Fitzgibbons sur, standing 125 ft.

BRAZORIA COUNTY—Gulf's Fairfield 1, Lockridge prospect, A. Robeson sur, dr shale 8513 ft. Humble's Moller 1, Danbury field, S. A. Towsey sur, ru.

BURLESON COUNTY—Red Bank Oil Co.'s Grann 1, Chriesman sur, E. Sante sur, dk.

COLORADO COUNTY—Sterling's South 1, Garwood area, I. & G. N. sec 41, ru.

CHAMBERS COUNTY—Glenn H. McCarthy's Kilgore 1, Cotton Lake area, J. Townsend sur, mim.

GALVESTON COUNTY — Shell's Maco Stewart 1, Hitchcock prospect, J. Spillman sur, dr shale 6035 ft. Sun's Houston Farms Dev. Co. 1, 2 mi se of Hughes 1, D. Buckley sur, ru.

FORT BEND COUNTY—Texas Co.'s Sugarland Industry 1, N. Rosenberg prospect, J. Foster sur, dr shale 3140 ft.

GRIMES COUNTY—Crooke Bros. et al's Greer 1, near Carlos, P. B. Connor sur, sd 2880' ft.

HARDIN COUNTY—Resource Prod. Co.'s Howth 1, sw of Areola, J. Cotton sur, sd 4830 ft. Republic-Houston's Brooks 1, Silsbee prospect, J. W. Brooks sur, dr shale 4589 ft.

HARRIS COUNTY—D. B. Cherry et al's Dodger 1, Epsom Downs area, J. T. Harrell sur, lcn. Circle W Oil Co.'s Houston Realty Sales Co. 1, Battleground prospect, H. Carpenter sur, abn 6027 ft. Houston Oil Co.'s Helberg & Lackner 1, Eureka gas field, R. Reinerman sur, dr shale and lime 4308 ft. Zeni Oil Co.'s Perkins 1, Hockley dome, A. Sherrell sur, dr shale 7095 ft. Bunte Oil & Gas Co.'s Graves 1, Bammel prospect, C. Walters sur, mim.

JEFFERSON COUNTY—Shell's Carpenter 1, Nome prospect, M. Pevito sur, dr shale 6748 ft. Sun's Broussard 1, Labelle prospect, B. Blackmon sur, dr shale 9598 ft.

MATAGORDA COUNTY — Marathon Oil Co.'s Kountz 1, Midfield prospect, I. & G. N. sur, sec 11, dr shale 3593 ft. Pierce Estate Inc.'s Pierce Estate 1, ne of McCrosty, Wm. Brown sur, dr shale 3580 ft. Sun's Craig 1, Hawkinsville dome, T. Williams sur, setting screen 5160 ft. Tittes & Harris' Pierce Estate 1, Blessing prospect, J. W. E. Wallace sur.

MONTGOMERY COUNTY—W. O. Belnoski's Wood 1, Willis prospect, Wm. Weir sur, testing 3757 ft.

ORANGE COUNTY—Coker Oil Co.'s Mansfield 1, s of Vidor, J. W. Hill sur, sd 2495 ft. Tide Water's Brown 1, Cow Bayou prospect, M. Latham sur, dr shale 9389 ft.

SAN JACINTO COUNTY — Gholson & Decker's Randolph 1, Evergreen area, Vital Flores sur, dr shale 985 ft.

WALKER COUNTY—L. M. Gay et al's Stubblefield 1, w of Trinity, G. Badilla sur, dr shale 2035 ft.

WASHINGTON COUNTY—Carl Dyer et al's Thomas 1, n of Brenham field, H. Hensley sur, dr shale 2106 ft. Sun's Lauther 1, Clay Creek field, N. Clay sur, dr shale 6689 ft.

WHARTON COUNTY—Smith & McDannald's Presmeyer 1, Lakeview area, H. & T. C. sur, sec 10, abn 6624 ft. Cockburn's Fee 1, Magnet prospect, Smith & McKenzie sur, ru. Pure Oil Co.'s Bordenetal 1, Blue Basin prospect, W. H. Leckie sur, dr shale 1870 ft; Shult 1, Blue Basin prospect, L. P. Ogden sur, dr shale 5180 ft.

SOUTH TEXAS

ARANSAS COUNTY—Buchingham Oil Co.'s McCampbell 1, James Orick sur, 2 mi nw of Aransas Pass, td 7501 ft, pb 6534 ft, blew out while making dst, moved in new rig, sd/tr, now dr 6541 ft in sd/tr hole.

ATASCOSA COUNTY—R. C. Lee Trustee's U. A. Doumch 1, 152-ac tr, blk 10, J. T. Russell sur 1222, 3 mi n Poteet, set 7-in csg 3460 ft, top chalk 3503 ft, dr 3623 ft. Helvetia Oil Co.'s Susie Pratt 1, 176-ac tr, J. de la Garza sur 46, 1 mi nw Anchorage, dr 2375 ft.

BASTROP COUNTY — Marts & Beavens Parkford & Jenkins 1, center lot 24, Bastrop Town tr, td 3410 ft, ds stuck, fresh water broke in. J. E. Mills' C. O. Randle 1, 100-ac tr, B. Brymer sur, 4 mi se Cedar Creek field, td 2440 ft, 5-3/16-in csg 2228 ft, d & a.

BEE COUNTY—Geo. M. Church et al's C. A. Ray 1, Anna Burk sur, 2 mi e Beeville, sd 4500 ft. Dirks Bros.' M. M. Bergel 1, s 46 ac of w 86 ac of E. C. White sur, ½ mi sw Voss field, d & a 4306 ft. Eden Oil Co.'s J. E. Copeland 1, Obed Marshall sur, dr 3415 ft. Marine Oil Corp.'s J. C. Woods 1, 427-ac tr, J. Ryan sur, disc well, Beeville field, sd 5831 ft. Nichols & Quinn's J. R. Scott 1, blk 7, Howeth & Swiger sub, Uranga gr, sp & sd, wor. H. A. Pressey's R. T. Hicks 1, 1120-ac tr, Jose M. Uranga gr, ab 568, 4½ mi s of Normana, td 3568 ft, broken snd, shale and shells 3482-3568 ft, show dry gas, set and cemented csg on btm, perf 3482-87, testing.

BEXAR COUNTY—American Gas Co.'s Oliver 5, 400-ac tr, M. F. Rodriguez sur, Gas Ridge, dr 3108 ft in hard lime. Carter & Ingersoll's Louis Mann 1, 60-ac tr, John Christopher sur, 3 mi s Von Ormy, td 1202 ft, running 6⅝-in csg to td and will then dd into chalk. Joe Deupree's Mrs. R. S. Nina (R. S. Coffey) 1-A, Rodriguez sur, 7 mi s San Antonio, sd 1200 ft, to recement csg at 1059; R. S. Nina (Coffey) 2, F. Rodriguez sur, sd 900 ft, sh. B. Schumacher's Hilda Gillette 1, 49-ac tr, M. C. de Alamiz sur 20, 7 mi s San Antonio, dr 1055 ft. F. M. Shaver's A. W. Bitter 2, Jose Baerrera sur 58, 2 mi nw Von Ormy, sd 1178, top chalk 1171 ft. Dr. L. Skaggs' P. A. Chapman Jr. 1, 125-ac tr, A. J. Leslie sur 99, 10 mi sw S. A., coring 965 ft. Fred Thorman's A. L. Salm 1, 330-ac tr, Peter N. Hays sur 3, coring 1620 ft. R. P. Whitfield's Col. John Sweeny 1, GH&SA RR sur, 11 mi sw San Antonio, td 804, set csg, tested dry. Woodward & Hardie's R. W. Devilbiss 1, John W. Devilbiss sur, 1 mi w Thelma, sd 2280 ft, set csg abt 2800 ft.

BROOKS COUNTY—The California Co.'s E. Garcia 1, tr 3, Las Mestinas de Gonzaline gr, Alta Mesa dist, fsh at 8022 ft, stuck ds. Fairway Prod. Co.'s Wm. Singer 1, sur 312, 1500 ft se Alta Verde disc, dr 938 ft.

BURLESON COUNTY—M. R. Exploration Co.'s J. M. Fountain 1, 4395 ft sl of nl, 3225 ft w of el of a 963-ac tr in W. Raleigh sur, lcn. Red Bank Oil Co.'s Nellie Grann 1, 330 ft nl, 1500 ft el of 221-ac tr Eliza Santef sur, ru, prep sp.

CALDWELL COUNTY—H. B. Starkey's (J. J. Elam et al's) Francis-Brown-Cochran 1, W. F. Young sur, 5 mi e Luling, sd 1200 ft, shale. W. C. Jennings & Whittington's McMahan 1, James Pinchback sur, se Lockhart, td 2324 ft, pb to 2290 ft, in Eagleford, 5-3/16-in csg 1445 ft, d & a. Lincoln Pet. Corp.'s T. H. Brown 1, 175 ft sel, 330 ft swl of 70-ac tr, Dillard Cooper sur, dr 1760, hard Taylor. Wheelock & Collins' Alexander 1, in 154-ac tr, Wm. Spillers sur, 150 ft ne, 225 ft sw Odgen et al's 2 Alexander, dr 300 ft.

CALHOUN COUNTY—Blanco Oil Co. & Al Buchanan's P. H. Welder, D. L. Palmer sur, 1 mi ne Heyser disc well, mim. Continental Oil Co.'s Austin (Vandenburg) 1, sec 12, blk "H," Pedro Garcia sur, 1 mi n of other heaving shale wells, Seadrift prospect, td 6614 ft, set 11¾-in csg at 6598 ft, ru to dr with csg through heaving shale. Humble Oil & Refining Co. & Plymouth Oil Co.'s E. H. Welder 2, ¾ mi sw Heyser disc well, Jose Maria Rios sur, dst 5454-73, rec 35 lbs pres, 90 ft mud, 320 ft oil, 15 min, set 7-in csg, setting screen & liner; P. H. Welder 3, making lcn. Matagorda Oil Corp.'s (Hilton & Miese) J. Brundrett 1, Wm. Bittle sur, sd 502 ft.

DEWITT COUNTY—L. W. Capps et al's H. Buchhorn 1, 211.1-ac tr, S. V. Slade sur, at the town of Lindenau, 5 mi w Cuero, td 675 ft, resetting sur csg. Universal & Gillespie's Schubel 1, C. Fitzgerald sur, abt 2 mi nw Yoakum, td 1567 ft, set 6⅝-in csg at 1550 ft, cap 1550-57½ ft, sand 1557½-67 ft, bailed down cement broke, now sd.

DUVAL COUNTY—Conservative Oil Co.'s DCRC 1, sur 51, 2 mi se Colemena field, set csg at 1553 ft, perf csg 1535½-36 ft, set plugs 1548 ft, swabbed sw & some oil, dr ahead 2312 ft in hard cap rock. Gifford Oil Co.'s A. S. Roach 1, sur 200, 7 mi sw Driscoll field, dr 2507 ft. C. G. Glasscock's Milano Land & Gardens Co. 2, sec 88, 4 mi se Loma Novia, td 3298 ft, set csg 3291, swabbed & sd. Frank J. Gravis et al's Gravis et al 1, sec 250, 9 mi

w San Diego, td 5150 ft, sd 5137 ft in sdtr hole; Schallert 1-A, sec 555, Palangana salt dome, td 1300 ft, set 10-in csg at 1300 ft. Chas. T. Kleiner's T. E. Chernoskey, 330 ft el, 260.5 ft sl, n 30-ac of se 60-ac sur 226¾ mi nw Westheimer & Daube 2, sand 2693-2708 ft, set 7-in csg 2707, woc. M. D. Mastin's D. Ruiz 1-A, 50 ft se No. 1, sur 128, lcn. Navarro Oil Co.'s W. R. Peters 1, w 380-ac sur 39, n of Peters field, sd 2741 ft, oil, gas & sw sand 2615-2734 ft. Pan American Prod. Co.'s J. F. Welder Heirs 1-H, 160-ac lse in sur 103, 1 mi sw of Loma Vista, clearing lcn. Parr Oil Co.'s J. F. Welder Heirs 1-A, 990 ft nl & wl of 200-ac lse sur 102, 1 mi sw Seven Sisters field, top Gov't Wells 2508, d & a 2747 ft. Randon Oil Co.'s Central Securities Co. 1, lot 23, Central Securities sub, Diego Minjosa, 5 mi sw of Realitos, coring for Pettus 4232 ft, top Jackson 2975 ft, top Hockley 3656, top lower Gov't Wells 3812. Rogers & Rogers' E. R. Hagist 1, 330 ft sl & wl of lot 14, sec 265, 2 mi ne of Eagle Hill, sp; Rita S. de Pena 1, R. S. Pena plat, El Mesquite Trindad Vela gr, se Cole field, td 2862 ft, sand 2850-62 ft, set csg 2845 ft, shut in for storage. Smith & Hamill's Juan Benavides 1, Juan Benavides lands, E. Mesquite gr, dr 2950 ft. Shell Pet. Corp.'s J. F. Welder Heirs 1-B, 79.3-ac lse in sur 69, 1¼ mi nl Loma Vista field, dr below sur csg set at 114 ft. Stanolind O. & G. Co.'s Ira G. Yates 5, sec 416, Labbe, td 2490, tested sw, d & a. Cox & Hamon's (Starr Development Co., Inc.) J. B. Peal, sur 796, 1 mi ne Lopez, sd for weather 1855 ft.

FRIO COUNTY — Amerada Pet. Corp.'s Halff & Oppenheimer 7, B. J. Gilman sur, Pearsall, td 3926 ft, pb to 3877, woc; Arthur Michael 2, A. Lynch sur 321, Pearsall, dr 4088 ft; C. A. Miller 1, 394.3-ac tr in B. Satello sur 323, Pearsall, dr 4570 ft. Termo Co. of Texas' J. D. Arp 1, 102-ac tr, S. Blain sur, 4000 ft w Pearsall field, td 5870 ft, top Austin chalk 5502 ft, show some oil, prep to shoot or acidize.

GOLIAD COUNTY — Keystone Royalties Co.'s C. B. Wood 1-A, Rioa sur, 3 mi e Berclair, sd 6702 ft. Claude Morgan et al's Mrs. W. O. Maetze 1, G. Barrera sur, prep sp. Zeni Oil Co.'s M. Lutenbacher 3, sw ¼ of blk 25, Goliad Town sur, 2 mi s Goliad, dst 4150 ft, slight gas flow, top Pettus 5365, took core recovered bottom 6 inches, showed sandy shale, attempted to blow out, set 7-in csg 5352 ft, cemented with 560 sacks, dr plugs.

GONZALES COUNTY—Tull et al's Boska 1, 61.2-ac tr, B. McClure sur, co 2050 ft.

GUADALUPE COUNTY — Ira L. Armstrong's F. H. Fieke 1, 304-ac tr, B. & G. Fulcher sur 19, near Staples, sd 340 ft. Pat Armstrong's J. F. Fulcher 3, Robt. Smith sur, 2 mi sw Prairie Lea, sd 2477 ft. J. E. Clark's E. W. Williams 1, Green DeWitt sur 13, 4000 ft sw S. Darst Creek, td 2509 ft, chalk 2358 ft, 6⅝-in csg at 2357 ft, pb to 2495 ft, comp on pump no gauge. Clark & Weinert's W. O. K. Anderson 1, Green DeWitt sur 11, 6 mi s Kingsbury, hole lost 2232, skid over 50 ft, dr 700 ft in rock. Eickenroht & Gallagher's O. H. Jahns 1, 840-ac tr, Green DeWitt sur, 3 mi sw South Darst Creek, td 3134 ft in Buda, ream to 2750 ft, will set csg.

HIDALGO COUNTY—J. T. Barlow et al's Chapa 1, tr 252, por 39, n side Samfordyce field, td 3200 ft, pb 2800 ft, cored sand 2938-59 ft, shale 2959-60 ft, in sd/tr hole, wo new fsh tools to remove 114 ft of liner lost in hole just above td of 2959. Maxwell-Mundy-Morris' Southland Dev. Co. (Hidalgo County Water Control & Impr. Dist.) 2, lot 1, blk 20, Alamo Lnd. & Sugar Co. sub, Alamo gr, 4 mi s Alamo, sd 731 ft. Quintana Pet. Corp.'s John C. Engelman 1, lot 10, blk 94, Mestenas gr, 4 mi se Mestenas field, td 8904 ft, cut out ds to 1754 ft, d & a. Dayle L. Smith Oil Co.'s Fairbanks & Young 1, blk 44, porc 46, Reynosa Juris, 4 mi e Samfordyce field, sd 1856 ft. Union Sulphur Co.'s ARGL&I 7, tr 2309, blk 59, 4000 ft e Mercedes field, td 7608 ft, 5-in csg 7530 ft, testing in pb hole at 7595; ARGL&I Co. 8, lot 2120, blk 87, N. Capisalle District, N. Mercedes field, td 7822 ft, 5-in csg 7822 ft, pb to 7500 ft, pb to 7218 ft, will sd/tr, dr 7333 ft in sd/tr hole.

JACKSON COUNTY — Steinberger Pet. Corp.'s Drushell 1, lot 6, Gale sub, Hayes ranch, N. Rodriguez sur, edge Edna gas field, coring for sand below 5000 ft.

JIM HOGG COUNTY—J. J. Cosner's E. Vela Heirs 1, blk 5, Clark & Cowder sub, sur 571-572, sh 1, El Peynote gr, 5 mi se Henne-Winch Farris field, lcn. Theo Hicks et al's Kohler 1, blk 9, sub Noriscitas gr, 3 mi nw Hebbronville, lcn. Magnolia Pet. Co.'s Magnolia-Holbein 1, sur 36, Villareal sub, Agua Nueva de Arriba gr, d & a 4400 ft. Stephens et al's J. Gray 1, 2890-ac tr, Noriacitas sur, lcn.

JIM WELLS COUNTY—Gist & Graddy's B. W. Owens 1, Poitevant sur, nw Bentonville field, resume dr at 1934 ft; J. Bennett 1, lot 87, sec 76, Holdeman sub, 2 mi w Premont field, sd 1265 ft. E. M. Jones' R. Adams 1, se cor of blk 47, Weldron Oil & Gas sub of Robert Adams Ranch, 1¼ mi w Alfred, d & a 6535 ft. La Jita Corp.'s Fred Erck 1, sec 15, 1 mi n of Bentonville disc well, dk; W. E. Pope 1, sec 20, 1½ mi w of King Ranch field, dst 5330-51 ft, 550 lbs pres 19 min. 170 ft oil & mud, reamed through gas sand, dst 5340-51, showed 510 ft plo, 12 min, 150 lbs pres ¼ & ⅜ ch, set csg at 5340 ft, comp est 11 bph ⅛ ch, tp 1300 lbs. Stanolind O. & G. Co.'s Frame & Bowers 1, sec 14, King Ranch sub, 1 mi ne Bentonville disc dst 5385-5394 ft, dst failed, coring ahead; J. E. Saim 1, sec 18, n offset disc well Bentonville field, td 5850 ft, set csg 4880 ft, pb to 4340, show 300 ft sw 5 min no pres, ¼ & ⅜ chokes, pb to 4000 ft & comp as gas well; J. J. Thompson 1, sec "A," King Ranch, 150-ac tr, sand 5395-5400 ft, dst 5357-5405 ft, show 100 ft mud with a trace of oil, ¼ & ⅜ chokes, 15 min no pres, ran electric formation test, attempted dst 5391-5405 ft, reaming to core ahead.

KARNES COUNTY—DeGraffe & Reele's Cochron 1, McConnell league, 5 mi ne Riddleville, ru & sd. Hickman et al, R. L. Barnett 1, Alex Hunter sur, sd 1800 ft. Worth Oil Co.'s E. Hysaw 1, 1069.8-ac tr, Don Erasmus Seguin gr, w of Kennedy, set sur csg, wor.

KERR COUNTY—Auld & Evans' I. R. Henner 1, sec 13, BS&F sur, 25 mi nw Kerrville, sd 2838 ft.

KLEBERG COUNTY—Clark et al's Kivlin 2 McCord & Daybault's Killam 1, lot 7, sec 53, DT&I sub, 5 mi se Recardo, lcn.

LASALLE COUNTY—Davenport & Talbot's G. Watkins, sur 103, 25 mi e Encinal, sd 2729 ft. Kennedy & Johnston's Gilmer & Wildenthal 1, 140-ac tr, sur 283, 8 mi se Cotulla, dk blew down, rebldg. Paul Meadors & Adair et al's Reed 1, sec 136, T. Conlan sub, 15 mi e and 10 s of Cotulla, sd for fuel td 3125, whipstocked out at 2592, dr in sd/tr hole 2650. W. H. Vernor's M. G. Jeffries 1, sec 726, HE&WT Ry sur, 10 mi se Artesia, dk blew down, rebldg.

LAVACA COUNTY—Cole Pet. Co.'s F. A. Kurz 1, 75-ac tr, E. Toodman sur, 3½ mi n Shiner, d & a 2505 ft. Cole Pet. & Rhea Nixon's Reed E. Nollkamper 1, 3 mi se Kurz 1, in 65.7-ac tr, sw cor of Arch Somthers sur, dr 1000 ft. Goode & Mayton's M. Schaffer et al 1, 481-ac lse, W. R. Hensley sur, lcn.

LIVE OAK COUNTY—Dirks Bros.' A. E. Nichols 1, S. Ryan sur, dr 1285 ft. Adolph Douvre's San Antonio Joint Stock Land Bank 1, plat 27, Tips subd, Richard Everett sur, 2 mi nw Three Rivers, reconditioning hole, well

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blew out, ran wild for two days, killed after pumping 200 sacks of baroid into hole, upper Cockfield 1784-93, upper portion carried 25 mcf gas volume, lower portion show sw, cored shale to 1799, saturated sand and shells 1799-1800 ft, sd 1800 ft account weather. Inter-Allied Pet. Corp.'s Aetna Life Ins. Co. 1, J. Poitevent sur, 49.47-ac tr, 6 mi ne Dinero, dk & sd. J. J. McRoberts et al's J. D. Mahoney 1, 142-ac tr, Thomas Henry sur, 3 mi w Three Rivers, sd 700 ft. Windsor Oil Co.'s B. E. Stolts 1, tr 9, J. Ingram sur, Ab 261, n part of county, d & a 3505 ft.

MAVERICK COUNTY — Rio Development Co.'s Winchester Kelso 1, 150 ft wl of 297-ac in sur 2, 3 mi ne fr Eagle Pass, lcn.

McMULLEN COUNTY—Rancho Oil Co.'s La Chusa 1, 330 ft nl & wl of se ¼ of sur 52, lcn. C. C. Shumway's Shiner Ranch 9, sec 51, Shumway sub, Shiner Ranch, 9 mi s Wetz, sd 500 ft.

MEDINA COUNTY — Frank A. Brown's Mary Mill 1, John Ward sur, sd 1100 ft. N. C. Johnson's R. T. Taylor 2, 320-ac tr, Henry Castro sur 136, mim. Thomas & Re fe's Amelia Zadich 1, S. O. Lubbock sur 509¾, se cor county, dr water well, will sp 7-11-36.

MILAM COUNTY—J. O. Kilgore Tr.'s W. R. Newton 1, J. Reed sur, Buckholt, dr 2500 ft.

NUECES COUNTY—Mills Bennett's J. K. Ordner 1, 120-ac tr, AB&H sur 410, ab 991, ½ mi w Saxet field, dr tr 5918 ft, pb to 4000 ft sand. Coastland Oil Co. & Keystone Royalties' (Paul Benedum et al) Page Bros. 1, s 50-ac share 2, Geo. Franks sub, 3300 ft w Saxet field, td 5931 ft, pb dst 5740-58, show 22 fourbles gasoline & mud, 450 lbs pres in 5 min, sand 5741-58, td 5758 in sd/tr holes, set 5-in csg on btm, perf 5751-55, co, making some gasoline cp 2100 lbs, tp 2200 lbs. Conroe Dr. Co.'s Rand Morgan 1-B, BS&F sur 403, Saxet, d & a 6518 ft. J. T. Cox's John Haney, share 11, Harney lands, Gregoria Farias gr, 2½ mi se Callahan, sd 2085 ft. M. F. Hurlburt's J. C. Phillip 1, lot 9, 20-ac tr, sur 48, Flour Bluff Encinal Garden Tracts, 9½ mi se Corpus Christi, td 7503 ft, set csg at 5850 ft, perf csg 6643-53, showed 43.3 grav oil on dst, running screen to comp. W. P. Hinds' Edwin Flato 1, center blk 8, sec 187, 1½ mi sw Clara Driscoll field, sd 3880 ft for repairs. O. W. Killam's Betty Ellich, 600 ft s No. 1 Ellich, moving in dk. G. M. Richardson et al's P. S. Carter 1, center of nw¼ of se¼ of sec 8, Laurels Farm tr, mim for 7000 ft test. Terminal Oil Products Co.'s R. V. Thurman 1, sw¼ sec 10, Flour Bluff Garden tracts, Rincon del Oso gr, d & a 6505 ft. Texon Drl. Co.'s Mable Eliff 1, 3054-ac tr in A. Longria sur, 2½ mi sw of Agua Dulce field, coring 4775 ft.

REFUGIO COUNTY—Mills Bennett Prod. Co.'s Fred Walzell 13, Bonnie View sub, E. Lopez sur, 7 mi s Refugio, dr 5158 ft, prep core for 5300 ft sand. Benedum & Trees' R. H. Welder 1, commence west corner Friedline pasture, thence n 53 degrees east 4443 ft to location in Juan Pabedano sur, ab 49, dk blew down, rebldg. E. W. Price et al's R. H. Wood 1, 446 ft nl, midway between el & wl of 100-ac tr or 2271 ft w of el, 446 ft s of nl of 600-ac lse in Dona Anastacia Reojas sur, ½ mi n Woodsboro & 4 mi s Refugio field, mim. Tidewater Oil Co.'s E. G. Landgrof 1, 220-ac tr, J. Collyer sur, eastern portion county, bldg road.

SAN PATRICIO COUNTY—Atlantic Oil Prod. Co.'s Maryland Trust Co. 1, blk 17, B-C sub, 1150 ft sw discovery well, Aransas Pass field, dr 3500 ft. Benedum & Trees' Mrs. E. H. Welder 2, sec 19, Welder Ranch sub, 3½ mi ne Sinton, td 7019 ft, pb 5027 ft, td in pb hole 5720, pulling tubing. Bunte's W. C. Mayfield 1, tr 11, Roos sub, 2 mi n White Point field, sp & sd. O. W. Killam's J. F. Green Est. 1, 782-ac tr, R. Roos sur, 1½ mi sw Taft field, sp. Joe Lundin & Rowan & Hope's Mrs. E. W. Welder 1, sec 80, Welder Ranch sub, 2½ mi sw St. Paul, fsh 5005 ft. Plymouth O l Co.'s E. H. Welder 2-D, sec 4, Welder Ranch subd, 1 mi e Sinton field, dr 4319 ft in sand; E. H. Welder 50-C, sec 50, Welder Ranch sub, td 5881, set csg, dr plugs, tool slipped on several dst but showed abt 800 ft oil & mud, no pres. Taft Prod. Co.'s W. D. Thomas 1, tr 3, sec 6, Taft Farm Lands sub, 1 mi e Taft field, dr 4334 ft.

STARR COUNTY—J. F. Anderson's Yzaguirre 1, 139-ac tr, porc 79, td 2034 ft, reaming down at 1925 ft. Bishop & Henshaw's W. D. Martin 1, sur 627, 13 mi n Rio Grande City, d & a 3530 ft. Porter Evans' SCCC 1, porc 89, 10 mi se Rio Grande City, 1700 ft; H. F. Ferry 1, blk 3, Evans sub, Ferry lands, porc 86, 7 mi se Rio Grande City, ru. F. Davenport & Slick Urschel's T. B. Slick Est. 1, 330 ft nl, 990 ft el of sec 485, prep sp. A. A. Kelley's N. Gonzales 1, 100-ac lse, sh 62, porc 71, sp & sd. Killam & Staggs' S. D. Ricaby 3, porc 83, Camargo Juris, 3 mi e Rio Grande City field, lcn. Larkin & Warr's Kelsey Bass 1, lot 8, Coastal sub, porc 87, Barbacosa area, td 5453 ft, temp abd, blew out, ran wild, Conroe sand of Yegua series 5282-5324, broken sandy shale 5324-42. Ed Leach's Warnder Trustee (Donna Est., Inc.) 1, porc 84, abd 2149 ft; Dona Est. 1, 2600 ft n of Rio Grande City, 700 ft wl of porc 84, Juris of Camargo, dr 510 ft. A. G. McMath's M. Guerra & Son 1, blk 25, Conroe subd porc 55, Juris of Mier 1, sd 85 ft.

WEBB COUNTY—Mid-Continent Pet. Corp. & Oklahoma Co. of Texas Inc.'s E. T. Laubacher 1, 330 ft out of ne cor of nw¼ of sec 1394, prep sp.

WILLACY COUNTY—Shell Petroleum Co.'s Yturria Land & Cattle 1, sh 64, San Juan de Carritos gr, La Sal Veja prospect, td 5486 ft, pb to 4600 ft, coring below 6330 ft.

WILLIAMSON COUNTY — Fritz Fuchs' Jackson 1, Fred Murray 80-ac tr, H. Owen sur, dr 700 ft, shale. Graham et al's V. F. Pfluger 1, J. Jordan sur, near Coupland, d & a 1056 ft. James H. Holdeman et al's Amor Forwood 1, 160-ac tr, HT&B Ry sur, sec 4, sur 14, sd 965 ft. W. H. Moody's J. F. Stiles 1, 230-ac tr, J. Vevil sur, ½ mi sw Thrall, lcn.

WILSON COUNTY—Otto Hierholzer's E. M. Hierholzer 1, B. Salinas sur, 12 mi sw Floresville, lcn. A. G. Reimenschneider's Lon Harrell 2, 209-ac tr, Manuel Baerrera sur, 5 mi s of Floresville, sd 740 ft.

ZAVALLA COUNTY—Bay Oil Corp.'s Nat'l Bk. of Commerce 1, sec 43, blk "A," Ab&M sur, 16 mi se Batesville, td 6585 ft, top Buda lime 6480, pb to 6250, acidized, showed some oil, shoot tested in pb hole, show little oil, may abd. Frank Buttram et al's Whitecotton 1, AB&M sur 1, top chalk 5281 ft, dr 5515 ft. Leona Oil Corp.'s George West 1, C. Bustillo sur 1, top chalk 5760 ft, sd 6020 ft, contract depth.

WYOMING

BIG HORN COUNTY—J. W. Bales, Parker 1, csw sw 23-49n-89w, dr 720 ft. J. L. Drumheller, Government 2, nw ne se 17-49n-91w, dr 1008 ft.

CARBON COUNTY—General Pet. Corp., Union Pacific 1, sw sw nw 5-19s-83e, dr 3128 ft.

CONVERSE COUNTY—E. B. Jones State 1, sw sw sw 16-32n-69w, dr 2590 ft.

NIOBRARA COUNTY—Lewis Gokel sw ne 31-34n-62w, dr 756 ft.

SUBLETTE COUNTY—Wright & Lackey Haddenham 1, nwc se sw 21-28n-113w, dr 136 ft.

WASHAKIE COUNTY—Wyoming Oil & Refining Co., Frison 1, nw sw nw 14-48n-97w, running 6¼-in. csg to 2236 ft, shut off water above so.

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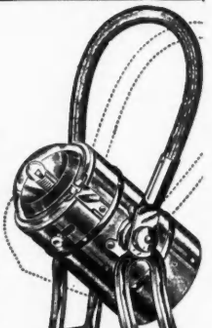
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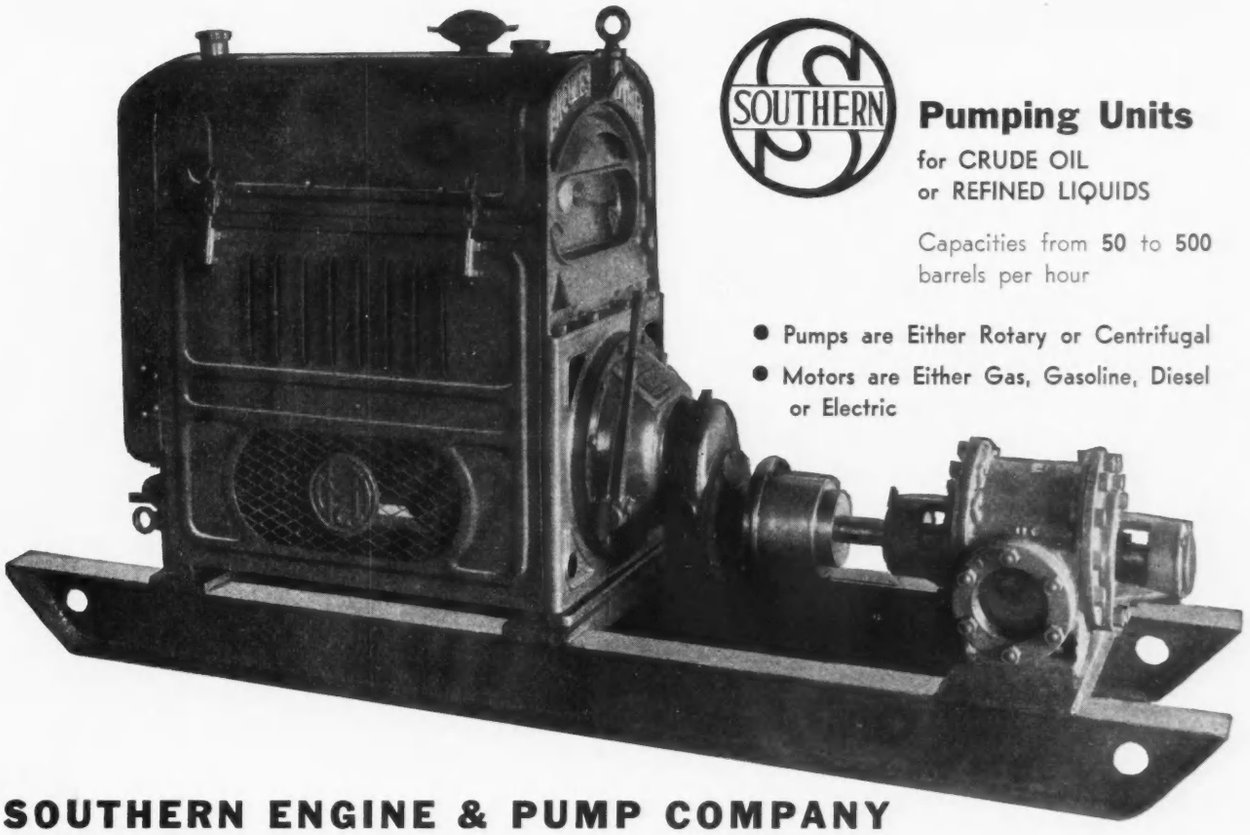

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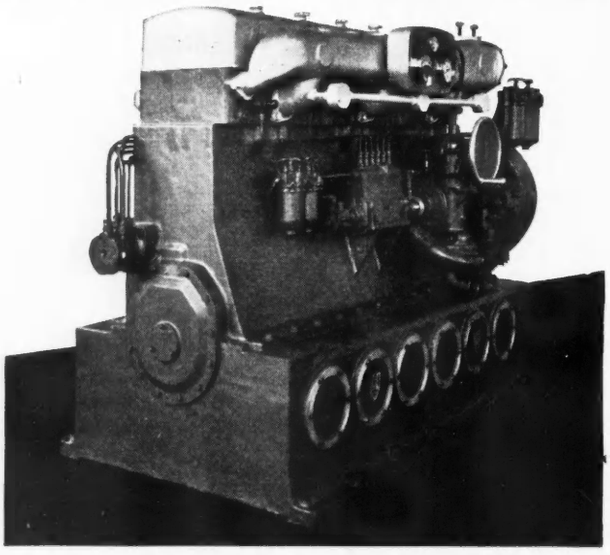

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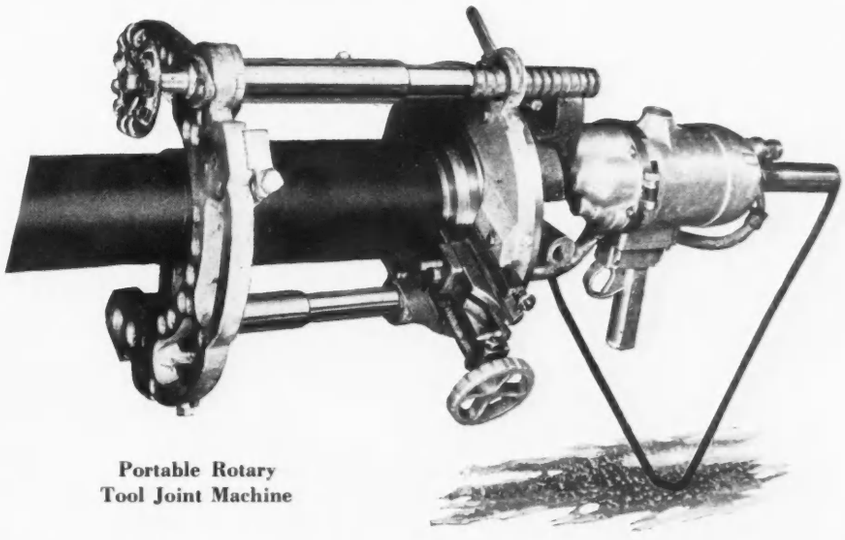
TOOL JOINT REPAIR
Portable Rotary Service Company

Portable Rotary Service Company, Greggton, Texas, announces a portable machine for repairing and facing tool joints on the lease. It is a concentrated, specialized portable facing unit designed for the utmost accuracy. The milling machine works from a gauge or templet from which the cutting tool is set at an accurate predetermined distance, assuring gauge accuracy. The finest gauges obtainable for every size tool joint are kept on hand for instant use, the manufacturer states.

Among the advantages claimed are: 1. Makes tool joints standard and interchangeable by taking the slack out of them. 2. Makes accurate, efficient tool joints out of those that would otherwise be thrown away, because of lack of time and expense of taking to shop for reworking. 3. Reduces to minimum tool joints from backing off with attendant costly delays and expensive fishing jobs. 4. Takes leaks out, thus minimizing the washing down of plaster of the wall of hole with consequent caving-in and sticking of drill pipe resulting in expensive, long-drawn-out fishing jobs. 5. A good square seat is made on the bottom end of box, for the elevators; a safety feature that minimizes accidents due to pipe slipping through elevators. 6. Taking out leaks speeds up drilling, for leaking pipe reduces the fluid pressure at the drilling bit, resulting in cuttings not being carried away fast enough and the bit balling up.

Licensed operators serving the trade are: Merritt Tool Company, Kilgore, Texas, for East and South Texas and Louisiana; Holder-Jewell Company, Duncan and Ada, Oklahoma, for Oklahoma and Kansas; M. O. Johnston, 3117 San Fernando Road, Los Angeles, California for territory west of the Rockies, also licensed to manufacture and sell for foreign use only.



Portable Rotary Tool Joint Machine

ROTARY AND SLUSH PUMP
The Wheland Company

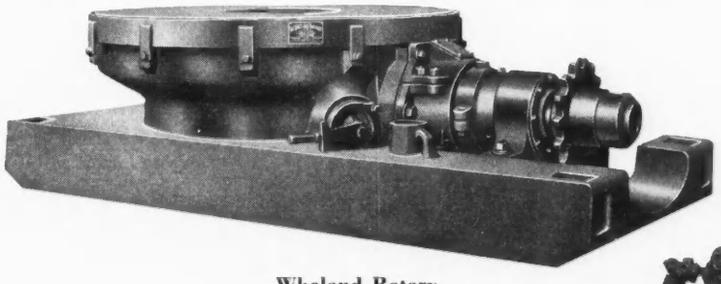
The Wheland Company, Chatanooga, Tennessee, announces a new rotary and a new slush pump.

The rotary, No. A-18000, includes several new features, designed to give increased performance, greater safety and longer life. The unit is totally enclosed, with triple oil bath. The manufacturers are emphasizing its stamina and rugged construction, at the same time featuring its smooth and quiet operation.

For the new 4-valve slush pump, Model H-15000 AD, 15 by 7¾ by 18-inch, the company claims, a combination of increased pump efficiency and steam economy. Features of this new pump are separate steam and exhaust valves; steam valves above cylinders and exhaust valves below the cylinders. These features, the manufacturer claims, give increased thermal efficiency, positive self-draining, increased mean effective pressure and more mud and more pressure.

FLEXIBLE COUPLING
Diamond Chain & Manufacturing Co.

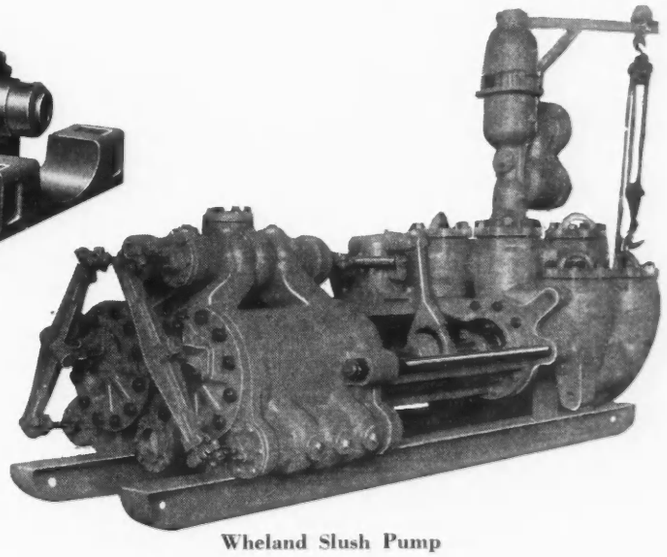
Diamond Chain and Manufacturing Company, Indianapolis, has announced an improvement in the Diamond flexible coupling which is the oldest flexible coupling of the chain type made. The coupling of the new series consists of two sprockets encircled by a length of Diamond double-strand roller chain. Clearance is provided between the sprocket teeth and the chain side plate to permit misalignment of the connected shafts. The flexibility is in the design rather than in material used,



Wheland Rotary

FLOAT SWITCH
The Rowan Controller Company

The Rowan Controller Company, Baltimore, Maryland, is offering an explosion-proof, oil-immersed float switch, a type developed for use in corrosive or hazardous areas, where operation of sump pumps, tanks and other equipment is a problem. The manufacturer will be glad to supply full operating details.



Wheland Slush Pump

and adequate flexibility is secured together with the strength and durability of steel. All Diamond couplings are now made with double-strand chain instead of single-strand. This gives a

Diamond Coupling

coupling of a given size more capacity and also permits its use on larger shafts for given outside diameter than the former design.

DRILL COLLARS
The National Supply Company

The National Supply Company, Toledo, Ohio, has announced a drill collar that is manufactured by a new method. It is a well known fact that in boring drill collars by regular methods allowance has to be made for deflection due to gravity. At best, this is a matter of the machine operator's judgment and experience. In order to make the boring of accurate circulation holes certain and automatic, the company has built special machines, which bore simultaneously from both ends and revolve the drills and drill collar in opposite directions. This imparts a natural inclination for the drills to seek and follow the true geometric axis of the collar and results in circulation holes more accurate and uniform than can be obtained by any other known method.

National Drill Collar

The description "true center bore" has been given to Ideal Rotary Drill Collars because circulation holes are centered on the true axis of the collar. This results in uniform wall thickness which gives increased strength and balance in rotation at high speeds. Circulation is unhindered and there is a minimum of opportunity for abrasion from sand in the fluid, the manufacturer claims.

The drill collars are forged from selected alloy and carbon steels and normalized in one full length heat following the forging operation. Also they are available with heat treated ends, quenched and drawn for four feet on each end after normalizing. In addition they may be furnished fully heat treated, normalized, quenched and drawn in three separate full length heats. Normalizing removes forging strains and heat treatment improves the physical properties of the steel, adding hardness, toughness, and strength. National regular shop inspection requires that a 10-foot test bar only ⅛-inch larger than the nominal bore pass freely through every collar.

This Week with the Industry's EQUIPMENT SUPPLIERS

Waukesha Motor Expands Export Work

With the appointment of M. E. Nicklin as export manager, Waukesha Motor Company, Waukesha, Wisconsin, has created a new department to handle its export business. It is the outgrowth of the export division which Nicklin has directed for several years.

Nicklin sailed from New York to Genoa, Italy, on July 3 for an extended trip throughout southern and central Europe. He will visit Albania, Greece, Austria, France, Belgium, Holland, Spain, Germany, Portugal and England before returning. Upon his return he plans to make other extended trips to the Orient and Far East.

M. E. NICKLIN

William H. Phillips Rejoins Worthington

William H. Phillips, recently with Harry Pratt Company of Chicago, has joined Worthington Pump & Machinery Corporation as power plant specialist with headquarters at the corporation's Chicago office.

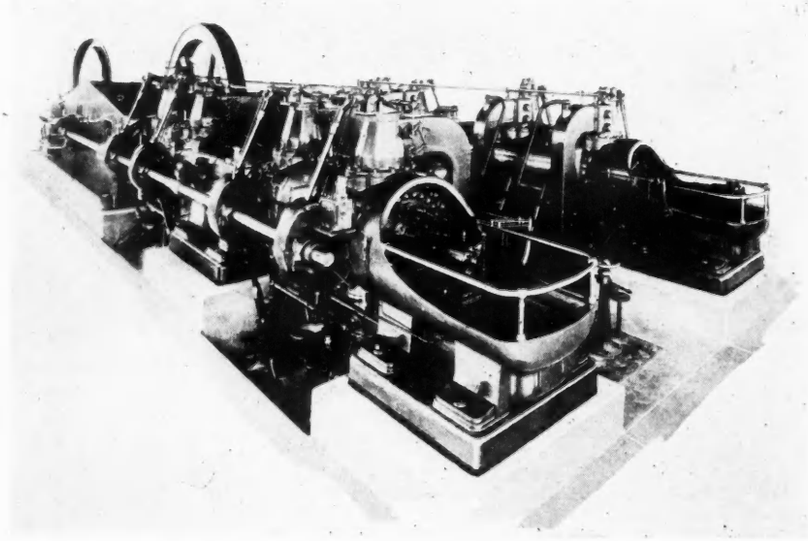
Phillips was formerly for many years with Worthington Pump & Machinery Corporation. He will specialize on condensers, steam-air ejectors, feedwater heaters and boiler feed pumps.

Big Compressors for Largest Gasoline Plant

What is said to be one of the world's largest gasoline plants, is being erected by Warren Petroleum Company in the new Rodessa field, Caddo Parish, Louisiana.

Eight large Cooper-Bessemer compressor units will be installed, to compress United Gas Public Service Company's wet gas, remove the gasoline, and then boost the dry gas to 450 pounds and send it into the utility's line. The compressor units are standard "Type 22's," each rated 1000 horsepower. They are four-cycle, twin-tandem, gas-engine-driven machines.

An unusual feature of this project, apart from its large size, is the sending of dry gas direct to market instead of recirculating it or using it for field operations.



Eight Cooper-Bessemer 1000-horsepower compressor units of this type have been ordered for one of the world's largest gasoline plants.

Stone Oil Tool Opens Store at Corpus Christi

Stone Oil Tool Company, Houston, has opened a new store at Corpus Christi. It is in the supply row district on Port Avenue. The store is equipped with a full line of special fishing tools, inside and outside cutting tools, underreamers, jars and other items. Operators to run these tools day or night are available if desired. The Corpus Christi branch is under the management of Max Prather, formerly located in the Houston area.

C. W. Cotton Company Is New Coppus Agent

The Coppus Engineering Corporation of Worcester, Massachusetts, manufacturers of air filters, steam turbines, blowers, heat killers, manhole ventilators, tank car ventilators, etc., announce the appointment of C. W. Cotton Company, National Bank of Tulsa Bldg., Tulsa, Oklahoma, as agents for its complete line in Oklahoma and Texas Panhandle.

C. W. Cotton Company has just recently been organized with C. W. Cotton, former district manager for Wailes Dove-Hermiston, as president and O. G. Houser, formerly with Continental Supply Company, as vice-president and treasurer.

Slush Pumps

Oil Well Supply Company, Dallas, Texas, recently issued bulletin No. 155(5-36), illustrating and describing its Wilson-Synder line of slush pumps for heavy duty work. The bulletin will be mailed upon request.

Catalogs... Bulletins

Toncan Iron Pipe

The fourth edition of "Toncan Iron Pipe for Permanence" is being currently distributed by Republic Steel Corporation, Cleveland, Ohio. This new 64-page book is profusely illustrated with test charts and tables and incorporates new sections dealing with threading, air conditioning, industrial maintenance and process uses, and brewing and distilling applications. Augmenting the test charts in proving the merits of Toncan Copper Molybedenum pipe is a large list of photographs showing the increasing applications for which this type of pipe is being utilized.

Spudding Machines

"Star Spudders" is the title of an attractive 24-page booklet offered by The Star Drilling Machine Company, Akron, Ohio, which covers this company's complete line of portable drilling machines.

Slush Pump Liners

Oil Well Manufacturing Corporation, Los Angeles, has published Bulletin No. 111, which illustrates and describes Red Devil Dia-Hard Steel Slush Pump Liners. Copies may be obtained by writing the manufacturer at 6000 South Alameda Street, Los Angeles, California.

Electric Motors

Crocker-Wheeler Electric Manufacturing Company, Ampere, New Jersey, will be glad to mail to interested persons a copy of its new folder, "Selecting Dependable Motors."

Pumping Engine

Cooper-Bessemer Corporation, Mt. Vernon, Ohio, has ready for distribution a four-page folder describing the vertical pumping engine it manufactures. The folder lists "12 field-proved features of this 40-horse power engine"; shows horsepower curves, cross sections, and shop views of the operating and exhaust sides, and a general data table.

Pumps

Worthington Pump and Machinery Corporation, Harrison, N. J., has ready for distribution two bulletins describing its horizontal, single piston pumps for general service. Bulletin No. W-111-B9 describes the valve plate type for pressures up to 75 pounds per square inch, and bulletin No. W-111-B8 describes the valve plate type for pressures up to 250 pounds.

Oil Field Equipment

The National Supply Company recently issued a series of interesting bulletins illustrating and describing a number of oil field equipment items it manufactures. These bulletins include No. T-536 on crown blocks; No. 102 on rotary drill stems; No. 110 on the National unit pumper; No. 3602 on Broderick saturated boilers; No. 99 on forged steel rotary drill collars; No. 98 on reduction gear units; No. 103 on Types TH801 and THD801 unit pumpers; No. 104 on a horizontal two-cycle convertible gas engine, 75-160 horsepower; No. 106 on Diesel-electric, direct current rotary rig drives; No. 107 on the Superior vertical two-cycle, Type F, convertible gas engine; No. 109 on the Superior Diesel-electric drilling engine, Type JDE; No. 111 on Superior convertible, fuel oil, butane and natural gas drilling engines; and No. 3607 on the Broderick portable oil field superheaters.

Oil Field Tools

The Stanley Rule & Level Plant, New Britain, Conn., has ready for distribution an attractive 20-page folder describing its small tools that are suitable for oil field use.

Compressors

Ingersoll-Rand Company, Phillipsburg, N. J., recently issued bulletin No. 2198, describing its two-stage, air-cooled portable, electric-driven compressors. The bulletin, which is well illustrated, will be mailed upon request to interested persons.

Pipe Bending Machine

American Pipe Bending Machine Company, Boston, Mass., recently published a folder describing the new B-35 pipe bending machine for cold pipe, boiler tube and conduit bending. It is available upon request.

The Law of
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Squeaks from the Bull Wheel

Youse Muggs

The office-seeking politician climbed aboard his soap box. He had picked a tough spot, right in the center of a rowdy East Side section. He held up his hand for silence.

"Ladies and gentlemen—" he began.

From all parts of the audience there came a loud razzing. The politician stepped back.

"I'm sorry," he apologized. "I didn't mean to insult anybody!"

Jury Fixed

Judge: "Have you anything to say?"

Defendant: "No, Your Honor. Those beautiful women on the jury, however—I mean the wonderful, youthful, graceful—"

Counsel: "I protest, Your Lordship."

Judge: "It's no use—we may as well dismiss the case at once."

Phonetic

Frenchman: "Ah, you climb the Matterhorn! That is a foot to be proud of."

Englishman: "Pardon me, sir, you mean feat."

Frenchman: "So you climb it more than once, eh?"

Wide Open

"'Twas a fine sermon the day," observed McNairn, "though mebbe 'twas a wee bit personal for ye."

"Na," sighed the village loafer. "It's a michty puir sermon that disna hit me somewhere!"

Short and Snappy

"I'm Suzette, Oriental dancer."

"Shake!"

Ready to Go

Sports Writer—It the big black boy in shape for the match tonight?

Trainer—Yes, suh, boss. He's in the ink of condition.

Just in Case

Lecturer (in village hall)—Now you all know what a molecule is—.

Chairman (interrupting)—Most of us do, but perhaps you'd better explain for the benefit of those who have never been up in one.

And Bargain Basement

The gallant captain was showing the fair maid over the ship.

"This," he explained, "is called the quarter-deck."

"Indeed," rejoined the sweet girl graduate; "and where is the 50-cent deck?"

Literal Translation

"What is your name?"

"Sneeze."

"Is that your real name?"

"No; me tlanslate it into velly good English."

"Well, what is your native name?"

"Ah Choo."

Saw Him First

A struggling young poet called on the editor of a country newspaper. He was met by the office boy.

"I want to see the editor," said the poet.

"Sorry, the editor is in Africa shooting lions," said the boy.

"Impossible!" the poet gasped. "I saw him through the window as I came along."

"Yes, but he saw you first," the resourceful office boy blandly replied.

All in One

Panhandler (to passer-by): "Say, will you let me have $100 to buy a dinner for myself?"

Passer-by: "I beg your pardon. I don't understand you."

Panhandler: "I said, 'Lend me $100 to buy myself a dinner.'"

Passer-by: "I really don't think I understand you."

Panhandler: "Oh, yes. I'm just putting all my begs into one ask it."

Preparation

"My wife is very busy these days getting ready to make political speches to women's clubs."

"Is she working hard on her addresses?"

"No, only on her dresses."

Now a Light Mower

"He is very thoughtful of his wife."

"Yes. Last winter he bought coke instead of coal so it wouldn't be so heavy for her to shovel into the furnace."

Key Was Safe

One morning a young clerk reported to his chief that he had lost the key of the safe containing important books and documents.

"But I gave you a duplicate key," said the chief. "You haven't lost that as well, I suppose?"

"No, sir, I know where that is!"

"Well, then, you can open the safe."

"Please, sir, I thought I might lose the duplicate key, so I put it in the safe!"

Fixed That

"Most interesting," said the sweet young thing to the motorcar salesman, "and now show me the depreciation, please; I hear it is heavy in these cars."

"As a matter of fact, madam," replied the opportunist, "we found it a source of worry, and had it removed."

We Agree!

"Is an editor a man who puts things in the magazine?"

"No, you fool, an editor is a man who keeps things out of the magazine."

Artistic

"You should have been there. When she got thru with her fan dance the noise was deafening."

"Applause?"

"No. Police whistles."

The Reason Why

"Why is it that you encourage all of your clerks to get married?"

"Well," replied the knowing boss, "I find that married men are not in such an awful rush to get home early as single men."

Stop, Look, Listen!

He heard the toot, but tried to scoot
And beat the choo-choo to it.
The poor galoot now twangs a lute—
Take heed and don't you do it.

Competition

"Did you hear the big news?"

"Spill it."

"My dog visited a flea circus and stole the show.

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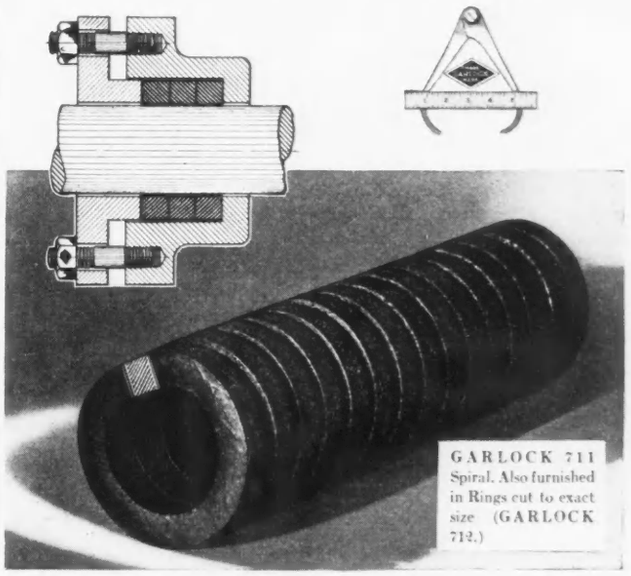

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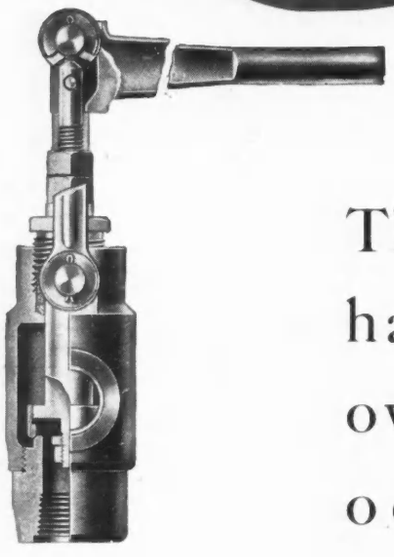

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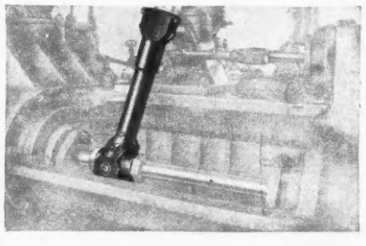

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